



# DEERGHAYU International

The Peer Reviewed Quarterly Journal for Ayurveda & Health Science since 1984



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# Ayurveda Pharmacy, My Voyage

Prof. Dr. Pandurang Hari Kulkarni  
Mahavaidya



Ayurveda is most ancient medical system. Charak, Sushrut explained Ayurveda Pharmacy in detail.



**History & Evolution of Pharmacy - 1**  
**Pharmaceutical Information by...**  
History of Pharmacy



Acupuncture CAM therapy Institute  
**Traditional Chinese Medicine and**  
**Chine TCM Herbal Medicine**  
Shen Nung is worshiped by native chinese Drug Guilds as their patron God. Pharmacy in Ancient China



'Babylon, jewel of ancient Mesopotamia, often called the cradle of civilization, provides the earliest known record of practice of the art of the apothecary. Practitioners of healing of this era (about 2600 B.C.) were priest, pharmacist and physician, all in one.'

"Pharmacy and medicine education in ancient Egypt. The ancient Egyptians knew many of the therapeutical effects of the medicinal plants. Century after century, the ancient Egyptians became more and more interested in medical sciences. Temples began to establish medical and pharmaceutical schools."

History of pharmacy - Wikipedia <https://en.m.wikipedia.org/wiki/Histor..>

In Ancient Greece, according to Edward Kremers & Glenn Sonnedecker, "before, during and after the time of Hippocrates there was a group of experts in medicinal plants, Probably the most important representative of these rhizotomol was Diocles of Carystus (4th Century CB).

"Chinese Pharmacy, according to legend, stems from Shen Nung (about 2000 B.C.), emperor who sought out and investigated the medicinal value of several hundred herbs. He reputed to have tested many of them on himself, and to have written the first Pen T-sao, or native herbal, recording 365 drugs."

- 1) Seven Decades Since 1947 worked as helper in my father's (Hari Anant Kulkarni, Sangli) Pharmacy (Arya Aushadhi Tejamruta) at the age of 12 years. I turned out as keen observer of all procedures. Raw material, Decoctions, Tablets, Bhasma/Calx, Avaleha etc.
- 2) In fifties and sixties, I was trained in theory and practice of Ayurveda Pharmacy at Sangli & Pune at Pharmacy of Ayurveda College and Tarachand Ramnath Hospital. As a teacher postgraduate students more emphasis was given to quality manufacturing with various modern and traditional testing parameters.
- 3) In seventies and eighties worked on New formulations, propagation of Ayurveda in foreign countries.  
Products prepared from Plant extracts. i) Ghana Sara, ii) Total Extracts, iii) CO<sup>2</sup> extracts etc. iv) Sookshma/Nano aushadhi, v) Bhavana of Kwath, Asava, Arishtra etc.  
Project completed at "Post Graduate Research Level, Doctoral/Post Doctoral level."
- 4) Last decade of 20th century and first decade of 21st century, Manufacturing of traditional and New products exported to foreign countries.  
Worked as advisor to Indian/Oversease pharmacies for manufacturing.  
Published articles/books on the topic.
- 5) Synonyms for voyage are plenty.  
Trip, Treak, Tour, Jaunt, Expedition, Excursion.  
Voyage is constantly ups and down. Full of thrilling experiences.
- 6) In 1947 myself and my younger brother selling Chandanrani Hair Oil, product of Arya Aushadhi Tejamruta in high profile area. People used to close door on our face. No patronage.  
At Saturday Bazaar there was good response from villagers.  
This was practical training about marketing.
- 7) We conducted various trials on medicinal plant extracts and supplied to practicing medical fraternity for use. Also supplied to manufacture of Ayurveda drugs. There was objection from Ayurveda advisor, Central Govt. in 1985. We had a meeting with advisor.  
He asked me, "stop manufacturing and supply. Otherwise we can put you behind bars. But we know your contribution to Ayurveda. I am giving warning to you."
- 8) Ayurveda drugs are poisons is popular propaganda for many years. We conducted laboratory tests, clinical trials and explained to concerned people.  
However whispering continues. Be careful and aware.
- 9) Marketing : Ethical marketing is useful. Avoid words like Original Ayurveda, Pure Ayurveda, Authentic Ayurveda, Traditional Ayurveda etc.  
Drugs/Products of Ayurveda is sufficient.
- 10) Rules/Laws : Ayurveda is controlled by various rules and laws of this land.  
When you want to export Ayurveda products overseas different INTERNATIONAL Laws are applicable. You should be well conversant with it.

11) Manufacturing Overseas :

A) 1986 : Australia - Adelaide. Chyvanaprash preparation from locally available Amala. Emblica Officinalis - E. fernandez.

B) 1988 : Australia. - Preparation of Drakshasava. Used locally grown black grapes and yeast.

C) Italy, Florence in 2000. - Manufactured cream of Wringthia Tinctoria = श्वेत इंद्रजव / दुधी / कुटज

Licensed chemist helped and it was well received at exhibition. Good for skin problem like Psoriasis.

D) Nano Ayurveda Medicines / Sookshma prepared and conducted courses in Italy, Australia (1999, 2000)

E) It was easy to manufacture Churna / Powders and Asavas in foreign countries. Single plant oils also prepared by few practitioners.



12) Good Manufacturing practice (GMP) is a system for ensuring that products are consistently produced and controlled according to quality standards. It is designed to minimize the risks involved in any pharmaceutical production that can not be eliminated through testing the final product.



One can follow standard manufacturing practices and get certificate.

13) When student enters in Ayurveda college, he should fix aim of becoming a best Ayurveda drug manufacturer / producer / processor.



14) One can earn to any extent.

You can apply for patent for many products. It is useful in long run.

Pharmacy is controlled by many authorities.

You can manufacture for small group of practitioners.

Maintain good library

Surf internet for new research on Ayurveda.

Attend and sponsor Ayurveda events. It is very useful.

Always follow Achar Rasayana.



***(Lecture delivered at International Ayurveda Conference in February 2017 at Pune)***



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**Research : Clinical**

## **Assessment of The Effect of CG4 (An Ayurvedic Formulation) In Management of Gastrointestinal Side Effects of Chemotherapy & Maintaining Well Being In Breast Cancer Patients**

**Vd. Anjali A. Deshpande**, PhD Scholar, Tilak Maharashtra Vidyapeeth,  
**Dr. S. P. Sardeshmukh**, **Dr. Vineeta V. Deshmukh**, **Dr. Swapna Kulkarni**,  
**Dr. Sweta Gujar**, **Dr Pranya Kodre**, **Dr.Dhananjay Deshpande**,  
**Dr.Vasanti Godse**, **Dr. Arvind Kulkarni**.

### **Abstract**

The aim of this study was to assess the effect of CG4 (an Ayurvedic formulation) in management of gastrointestinal side effects of chemotherapy and maintaining well being in breast cancer patients. In the present study the gastrointestinal side effects of chemotherapy were studied. This included the immediately occurring side effects namely anorexia, nausea, taste abnormality, vomiting, diarrhea, GI bleeding, stomatitis, constipation. The loss of weight and Karnofsky score for performance status of breast cancer patients were also assessed in the present study. In this open labeled controlled clinical study 100 diagnosed breast cancer patients were treated with chemotherapy only (control = 50) and with adjunct Ayurvedic medicines CG4 (study =50) were enrolled. Universally accepted standard assessment parameters like common toxicity criteria (CTC) and Karnofsky score showed statistically significant reduction of side effects, weight gain and improvement in the well being and daily activities of the breast cancer patients in the study group.

**Keywords:** Chemotherapy, side effects, Breast cancer, CG4 (Ayurvedic formulation), (13)

**Introduction-** Breast cancer is the most commonly diagnosed and dreadful disease of mankind. India ranks second to cervical cancer<sup>1</sup>. Conventional treatment modalities<sup>2</sup> for breast cancer are surgery, chemotherapy, radiation therapy and hormonal treatment in some cases. A cytotoxic drug kills the host (cancer cell) and possesses the potential to harm the healthy tissue causing the severe side-effects. However patients suffer from the severe side effects of chemotherapy<sup>3</sup>, hampering their quality of life, immune system jeopardizing its effect and sometimes contribute to discontinuation of therapy,

In our Cancer Research Centre, we had clinically assessed efficacy of Ayurvedic medicines in management of side-effects of chemotherapy in all types of cancers at different stages and grades. The assessment of side-effects would be difficult to understand as the chemotherapy regimen differs according to organ and type of cancer. Thus specific organ i.e. breast, the breast cancer has been chosen. Drugs used for chemotherapy are mainly disturbing the gastrointestinal functions. Thus affects Jatharagni, Annavaha, Purihavaha, Rasavaha and Raktavaha srotasas and causes pitta and rakta dushti. Ayurvedic medicines chosen for the study are Deepana – Pachana (digestive), Pitta shamak (anti-inflammatory) and Rasayan (immunomodulatory). Due to these actions the medicines improved quality of Life and thus

imparted the feeling of well-being. Hence the combination of Mauktikyuktakamadudha, Mauktikyukta pravalpanchamrut, Padmakadi Ghruta, Shatavari kalpa having properties as, pittashamak, raktashodhak, agnideepak, rasayana, balya, chhardighna, atisarhara, raktastambak, vranaropaka were used, which proved to be effective in the management of side effects of chemotherapy.

In this study we have studied the immediately manifested<sup>4</sup> side effects of chemotherapy in breast cancer patients treated with chemotherapy and adjunct Ayurvedic treatment. The side effects were assessed by using standard parameter (CTC) common toxicity criteria and Karnofsky score. The results indicated that complimentary Ayurvedic treatment reduce the intensity and severity of the side effects that helped the patient to tolerate the chemotherapy well and to complete the schedule of chemotherapy in given time.

**Aim:-**To assess the effect of CG4 (an Ayurvedic formulation) in the management of gastrointestinal side effects of chemotherapy and maintaining the well being in breast cancer patients.

**Objectives –**1. To evaluate the role of CG4 on side-effects of chemotherapy in breast cancer.  
2. To evaluate the role of CG4 on Karnofsky score in breast cancer treated with chemotherapy.

### **Materials and methods**

#### **Study design -**

Open labelled controlled Clinical trial was carried in two groups. 100 diagnosed breast cancer patients were selected for the study. 50 patients were incorporated in each group. Group A (study group) consisted of 50 patients who received chemotherapy and simultaneously Ayurvedic treatment CG4. Group B (Control group) consisted of patients who received chemotherapy alone. CG4 was the combination of 4 Ayurvedic medicines. The Ayurvedic medicines were Moukticyuktakamadudha 250 mg with milk in vyonodankal (after breakfast and evening snacks), Moukticyuktapralvalpanchamruta 250 mg with milk in vyonodankal (after breakfast and evening snacks), Shatavarikalpa 5gm with milk in vyonodankal (after breakfast and evening snacks), Padmakadighruta 5 gm in apanakal (before lunch and dinner) with warm water.

Patients receiving Chemotherapy regime according to standard chemotherapy protocols which were used in breast cancer like CAF, CMF, CG, AC-T, FEC etc.were enrolled<sup>5</sup>. The side effects of chemotherapy vary according to use of chemotherapy regimen. The following Chemotherapy protocols commonly used in breast cancer treatment were selected for the study. CAF - Cyclophosphamide, Doxorubicin, 5 flurouracil, CMF – Cyclophosphamide, Methotrexate, 5 flurouracil, CG - Carbopatin, Gemcitabine, FEC - 5flurouracil, Epirubicin, Cyclophosphamide, AC-T –Doxorubicin, Cyclophosphamide, Paclitaxel, TAC – Docetaxel, Doxorubicin, Cyclophosphamide.

#### **Inclusion criteria:-**

1. Breast cancer patients scheduled to receive intravenous chemotherapy.
2. Breast cancer patients undergoing the above mentioned chemotherapy regimens.
3. Patients of age group 25-75 years.



**Exclusion criteria :**

1. Patients with unconfirmed diagnosis of breast cancer.
2. Patients suffering from diabetes mellitus because one of the content from CG4 medicine was sugar based.
3. Patients likely to receive radiation therapy in combination with chemotherapy.
4. Patients suffering from delayed side effects of chemotherapy.

**Assessment criteria –**

1. Side effects of chemotherapy like anorexia, nausea, vomiting, diarrhea, taste abnormality, stomatitis, constipation, GI bleeding were assessed as per Common Toxicity Criteria (CTC) derived by Cancer Therapy Evaluation Program<sup>6</sup> (CTEP), (CTCAE v4.03 Pub: 14/06/2010, ref :<http://ctep.cancer.gov>) .
2. Assessment of general well being and activities of daily life by Karnofsky score<sup>7</sup> for performance status.

**Analysis of data**

Assessment of side effects of chemotherapy, weight and Karnofsky was carried out at 3 time points. Time point a - after the 1<sup>st</sup> cycle of chemotherapy, Time point b – middle of chemotherapy, Time point c -15 days after completing last cycle of chemotherapy.

The institutional Ethical committee of Tilak Maharashtra Vidyapeeth, Pune approved the study. Informed written consent for participation was taken from each patient willing to participate in the study. Case documentation was done on specially prepared CRF.

Statistical analysis -The data was analyzed using Mann Whitney test and paired t test.

**Results**

Data obtained was analyzed according to the assessment criteria. The side effects, Karnofsky score and weight were evaluated at 3 time points (a, b, c). The observations and results were represented in the following tables as assessment of symptoms, weight and Karnofsky score.

**Table 1 - Representing the number of patients suffered from the side effects of chemotherapy in both the groups at three time points.**

Sr. No.	Symptoms (side-effects)	Number of patients presenting symptoms (side-effects) in <b>Study group</b>			Number of patients presenting symptoms (side-effects)in <b>Control group</b>		
		at time point a	at time point b	at time point c	at time point a	at time point b	at time point c
1.	Anorexia	35	31	21	28	31	32
2.	Nausea	44	29	17	32	38	37
3.	Vomiting	19	10	9	10	17	18
4.	Taste abnormality	10	11	9	3	6	7
5.	Diarrhoea	9	13	3	5	10	15
6.	GI bleed	3	4	3	6	8	8
7.	Stomatitis	7	14	7	6	6	6
8.	Constipation	15	15	9	12	12	10

Chemotherapy side effects were obvious in both (study and control) the groups. But severity of these symptoms was much less in study group as compared to control group. The number of patients presenting the side effects at time point a (immediately after 1<sup>st</sup> chemo) were remarkably reduced in number at time point c (15 days after last chemotherapy).

As seen in the above table, Anorexia was presenting 35 patients at time point a and 21 patients at time point c in Group A while it was seen in 28 patients at time point a and 32 patients at time point c from Group B. This indicated the remarkable improvement in anorexia in study group patients.

Nausea was presented by 44 patients at time point a and by 17 patients at time point c in group A while in 32 patients at time point a and 37 patients at time point c in Group B. This also proved the efficacy of CG4 on relieving chemotherapy induced nausea.

Vomiting was presented by 19 patients at time point a and 9 patients at time point c in group A. While in 10 patients at time point a and 18 patients at time point c in Group B. Declining number of patients in group A and increasing number of patients in group B at time point c as compared with time point a, suggested the anti-emetic property of CG4.

Taste abnormality was presented by 10 patients at time point a and in 9 patients at time point c in group A while in 3 patients at time point a and 7 patients at time point c in Group B. Chemotherapy induced taste abnormality was evident in group B patients during the complete course of chemotherapy.

<b>Symptom Assessment (grade wise) - Group A v/s Group B at time points b and a [(b - a)]</b>
---

Diarrhea was presented by 9 patients at time point a and by 3 patients at time point c in group A while in 5 patients at time point a and 15 patients at time point c in Group B. Effectiveness of CG4 is also observed in the management of diarrhoea.

GI bleeding was presented by 3 at time point a and by 3 patients at time point c in group A while in 6 patients at time point a and in 8 patients at time point c in Group B. No significant difference on number of patients suffering from GI bleeding is observed in both the groups.

Stomatitis was presented by 7 patients at time point a and in 7 patients at time point c in group A while in 6 patients at time point a and in 6 patients at time point c in Group B. Stomatitis was reduced in almost 50% of patients at the end of chemotherapy in group A patients, while it persisted in all patients at time point c of group B, when compared with time point a.

Constipation was presented by 15 patients at time point a and by 9 patients at time point c in group A and 12 patients at time point a and in 10 patients at time point c in Group B. Moderate improvement in number of patients suffering from constipation is seen in A group patients when compared with group B patients.

**Table 2-Showing the– Statistical analysis of comparison of group A and B considering grade wise distribution of GI related side – effects of Chemotherapy at time points b and a**

Sr. No	Symptom	Mean of difference in grading Group A	Mean of difference in grading Group B	SD GR A	SD GR B	P value	Significance
1	Anorexia	-0.26	0.32	1.1	0.5	0.0011	Very Significant
2	Nausea	-0.42	0.28	1	0.5	0.0001	Extremely Significant
3	Vomiting	-0.14	0.2	0.8	0.4	0.0091	Very Significant
4	Taste abnormality	-0.06	0.06	0.9	0.2	0.3396	Not significant
5	Diarrhoea	0.08	0.14	0.7	0.5	0.6297	Not significant
6	GI Bleeding	0.0	0.14	0.2	0.4	0.03	Significant
7	Stomatitis	0.24	0.11	0.12	0.05	0.3074	Not significant
8	Constipation	-0.08	0.91	0.98	0.46	0.2456	Not significant

**Table 3- Showing the – Statistical analysis of comparison of group A and B Considering grade wise distribution of GI related side – effects of Chemotherapy at time points c and a**

Symptom Assessment (grade wise) - Group A v/s Group B at time points c and a [(c - a)]							
Sr. No	Symptom	Mean of difference in grading Group A	Mean of difference in grading Group B	SD GR A	SD GR B	P value	Significance
1	Anorexia	-0.7	0.5	1.1	0.6	<0.0001	Extremely Significant
2	Nausea	-0.8	0.6	0.98	0.75	<0.0001	Extremely Significant
3	Vomiting	-0.3	0.34	0.97	0.65	0.0001	Extremely Significant
4	Taste abnormality	-0.1	0.1	0.83	0.5	0.1519	Not significant
5	Diarrhoea	-0.3	0.3	0.7	0.6	<0.0001	Extremely Significant
6	GI Bleeding	0.0	0.14	0.4	0.5	0.00488	Considerably significant
7	Stomatitis	-0.1	0.1	0.7	0.4	0.088	Not quite significant
8	Constipation	-0.28	0.1	0.9	0.6	0.0141	Significant

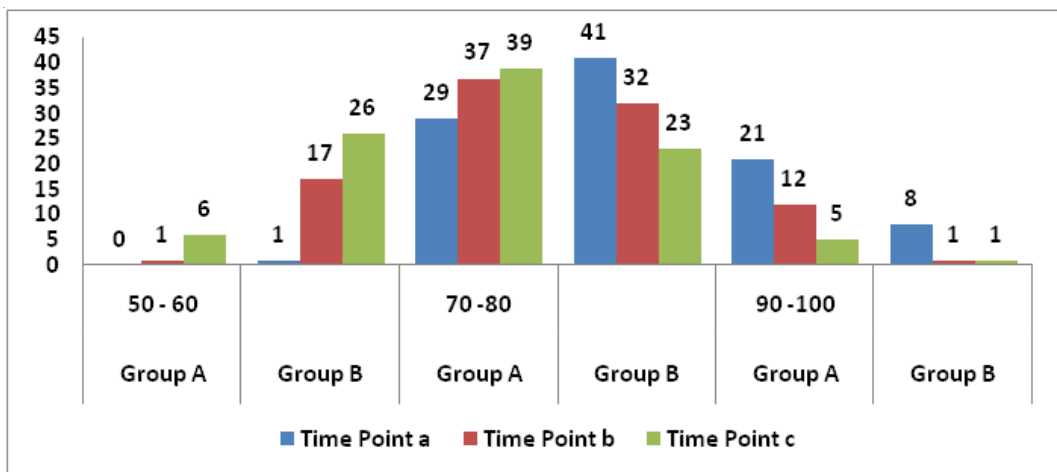
The above charts shows extremely significant results of the Ayurvedic medicine on the side effects like anorexia, nausea, vomiting, diarrhoea which was indicated by the p value ( $p < 0.0001$ ). The GI bleeding and constipation showed moderate significant effect of the treatment indicated by the p value ( $p = 0.0048$  and  $p = 0.0141$  respectively.) Stomatitis showed less significant effect indicated by the p value ( $p = 0.088$ ). Taste abnormality showed no significant effect ( $p = 0.1519$ ) of study medicine.

**Table 4 - Showing Karnofsky score of Breast cancer patients**

	Number of patients					
	Group A	Group B	Group A	Group B	Group A	Group B
	50 – 60		70 -80		90 -100	
<b>Time Point a</b>	0	1	29	41	21	8
<b>Time Point b</b>	1	17	37	32	12	1
<b>Time Point c</b>	6	26	39	23	5	1

For precise assessment, patients in both the groups were divided in 3 sub-groups based on the range of Karnofsky score i.e. subgroup 1 – Karnofsky 50-60, subgroup 2 – Karnofsky 70-80 and subgroup 3 – Karnofsky 90 -100.

The graphical representation of the Karnofsky score at three time points in both the groups.



Observations regarding Karnofsky score recorded at various time points:

- ◆ At time-point a - Karnofsky score between 50 – 60 was recorded by 1 patient of group B. Karnofsky between score 70 – 80 was recorded by 29 patients of Group A and 41 patients of Group B. Karnofsky score between 90 – 100 was recorded by 21 patients of Group A and 8 patients of Group B.
- ◆ At time point b - Karnofsky score between 50– 60 was recorded by 1 patient of Group A and 17 patients of Group B. Karnofsky score between 70 – 80 was recorded by 37 patients of Group A and 32 patients of Group B. Karnofsky score between 90-100 was recorded by 12 patients of Group A and 1 patients of Group B.
- ◆ At time-point c - Karnofsky score between 50 – 60 was recorded by 6 patients of Group A and 26 patients of Group B. Karnofsky score between 70 – 80 was recorded by 39 patients of Group A and 23 patients of Group B. Karnofsky score between 90 – 100 was recorded 5 patients of Group A and 1 patients of Group B. Statistical analysis of Karnofsky score at time points b and c is extremely significant ( $p < 0.0001$ ) and ( $p = 0.0006$ ) for group A.

#### Statistics – Clinical assessment

**Table 5 - showing statistical analysis of clinical Assessment in terms of Karnofsky score and weight in patients of both groups i.e. A and B at time points b and a**

Group A v/s Group B: At time point b (b - a)							
Sr. No		Mean of difference in grading in Group A	Mean of difference in grading in Group B	SD GR A	SD GR B	P value	Significance
1	Karnofsky score	-4.4	-11.6	6.4	7.9	<0.0001	Extremely significant
5	Weight	2.7	1.7	19.6	6.6	0.1273	

**Table -6 Showing statistical analysis of clinical Assessment in terms of Karnofsky score and weight in patients of both groups i.e. A and B at time points c and a**

Clinical Assessment Group A -- Group B (c - a) at 15 days after last chemotherapy (c)							
Sr. No	Symptom	Mean of difference in grading in Group A	Mean of difference in grading in Group B	SD GR A	SD GR B	P	Significance
1	Karnofsky score	-7.8	-13.4	8.1	7.7	0.0006	Extremely significant
5	Weight	4.9	-1.5	17	3.5	0.0097	Very Significant

The above observations showed extremely significant results of the CG4 Ayurvedic medicine on the Karnofsky score which was indicated by the p value ( $p < 0.0001$ ) at time point b i.e. in the middle of the chemotherapy and p value ( $p = 0.0006$ ) at time point c i.e. 15 days after the last chemotherapy. The weight gain was observed in study group indicated by p value ( $p=0.0097$ ) while there was weight loss in control group at time point c i.e. 15 days after last chemotherapy.

### Discussion

Management of chemotherapy induced side effects described above was a perpetual problem in giving chemotherapy in breast cancers. The allopathic modalities of management of side effects were rather peripheral, which included the nutritional support to minimize the weakness, pain control to reduce the sufferings, control of bleeding to counteract the blood loss by administering the blood clotting factors, correcting the blood loss by blood transfusion, iron supplements, intake of haematinic. Allopathic management of side effects included the antiemetic, antihistaminic, antacids, purgatives, anti diarrheal, antibiotics, steroids, and injections of filgrastin to increase the leucocyte counts and to counteract the side effects of chemotherapy.

The Ayurvedic drugs used were non-toxic, easily palatable and not very expensive, and the effect appeared very significant. Patients diagnosed with breast cancer and underwent chemotherapy were mostly in between the age group of 31 to 70 years. in both the groups. This group comprised of perimenopausal and menopausal stage in which the hormonal changes occurred frequently. 40% patients were in the 50 years onwards age group who were affected. 97% patients were diagnosed as infiltrating ductal carcinoma. Infiltrating ductal cancer or Invasive ductal cancer was the most common type of breast cancer. In stage wise distribution of breast cancer 50% patients are of stage III and 30% patients are of stage II. 80% of the patients were receiving chemotherapy after surgery that was adjuvant chemotherapy.

Side-effects exhibited by chemotherapy drugs mainly disturbed the gastrointestinal system causing Jatharagnidushti and Pitta dushti. These drugs had direct effect on rasa, rakta, asthi, majja, shukradhatu. Chemotherapy drugs also vitiated Rasavaha, Raktavaha, Annawahastrotas. The Pitta dushti caused raktadushti, as Rakta and Pitta being interdependent. Mouktikayuktakamdudha<sup>8</sup> and Mauktikyuktapralpanchamrut<sup>9</sup> were Rasayan, Agni deepan, Pitta shamak, Raktashodhak, Jwaraghna, Raktapittahar, Vishbadhahar Chhradighna Dahashamak, Arochakahar, Pachak, Pittasarak, Vishhara in nature. Padmakadi Ghrut contents Padmaka<sup>10</sup> (Kamal), Durva (Harali), Ananta (Sariva) and Goghruta. Padmaka, Durva, Ananta<sup>11</sup> and Ghruta are Pittanashaka and Tridoshashamaka. Thus it was also useful in Trushna (thirst), Mukhapaka (stomatitis), Amlapitta (Acidity) and Daha (burning). Tikta rasa, Kashaya rasa and Madhurvipaka of Durva<sup>12</sup> were useful in Arochak (Loss of taste). It had beneficial effects on Chhardi (vomiting), Dravamalpravrutti (loose motions), Swedadhikya (excessive sweat), Raktapitta (bleeding through openings of body). Snigdha Guna of Sariva and Ghruta is useful In Agnimandya (loss of appetite), Daha (burning all over body), Malavastambha (constipation), Raktapitta (bleeding though openings of body). Vishaghna guna of Anantomool<sup>11</sup>,

Padmaka and Ghruta were useful in the management of the severe toxic, side effect of chemotherapy. Deepankarma of Anantmool and Ghruta, Raktasangrahi karma of Padmak and Anantmool, Rasayan karma of ghruta were useful in Daurbalya (weakness), Bharkshaya (loss of weight). Shatavarikalpa<sup>13</sup> contents Shatavari and sugar. Shatavari was Vata-Pittashamaka, Balya, Vayasthapan, Rasayan, Sthanyakar, Shothhar, Hrudhya, Vrushya, Agnivardhan with these properties these drugs counteracted the side effects of chemotherapy.

In this study, we assessed the patient's response to treatment in terms of functional ability and feeling of wellbeing with the help of Karnofsky scores which was well - accepted method of analysis of outcome measures. Karnofsky score for performance status was recorded for assessment of general wellbeing and ability to conduct activities of daily life. The higher score of Karnofsky denoted better ability to carry on normal activity which was recorded in Oxford Textbook of Palliative Medicine. As Karnofsky score indicate the feeling of wellbeing. In usual pattern it show decreasing trend during the course of chemotherapy. As per this trend Karnofsky score of most of the patients in control group was not improved during the course of chemotherapy at 3 evaluating time points a, b, c representing the mean values as 80, 68, and 66.4 respectively. On the other hand Karnofsky score (mean values) was either maintained or improved after chemotherapy in study group at 3 evaluating points as 80, 79, 76 respectively. Karnofsky score showed extremely significant p values at time points b and c respectively ( $p < 0.0001$  and  $p = 0.0006$ ).

Weight loss was a frequently occurring side-effect of chemotherapy in breast cancer patients as less intake of food associated with GI disturbance. It was developed due to anorexia, nausea, taste abnormality, stomatitis. However weight gain in study group as compared to control group in our study was due to Deepana, Pachan, Rasayana and Balya effect of selected Ayurvedic medicines CG4. This was indicated by p value (0.0097) at the time point c, i.e. 15 days after the last chemotherapy.

### Conclusion

- Combination of Ayurvedic medicines CG4 selected in our study was highly effective in management of gastrointestinal side-effects of chemotherapy, namely Anorexia, Nausea, Vomiting and Diarrhea.
- The severity of GI bleeding was significantly reduced in study group patients. Constipation was controlled significantly with study medicines during the course of chemotherapy.
- Weight loss was controlled very significantly with the use of Ayurvedic medicines.
- Karnofsky score depicting wellbeing and ability to conduct activities of daily life was highly significant in a group of breast cancer patients treated with Ayurvedic medicines CG4.
- Significant improvement was not observed in taste abnormality with adjunct Ayurvedic medicines.

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Experiment :

## Pharmaceutical standardization & preliminary physico-chemical evaluation of Punarnavadi Eye Drops

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### ABSTRACT

Till date, very less work was done in Standard Manufacturing Procedure (SMP) of many efficacious *Ayurvedic* formulations are not mentioned in classical texts. Hence it is needed to standardize their SMP on laboratory scale so that these observations can be reproducible on large scale production also. This study was carried out to develop SMP and preliminary physico-chemical profile of *Punarnavadi Eye Drops (PED)*.

*PED* was prepared by following reference of *Bhaishajya Sara Samgraha (BSS)*. The dropper bottles were filled in sterile aseptic condition. They were stored in refrigerated condition till use. Three batches of *PED* were prepared for the standardization purpose. Various physico-chemical parameters were carried for three batches as per pharmacopoeial standards.

Average values of Specific Gravity, Refractive Index, pH and Total Solid were 1.0580, 1.3516, 3.5 and 12.3438 % respectively. High Performance thin Layer Chromatography (HPTLC) indicates 9 to 10 spots in 254 nm and 5 to 6 spots in 366 nm with in different batches.

Data obtained from the present study is reproducible. Thus SMP of *PED* has been developed. To avoid the batch to batch variation, this SMP may be applied to large scale production of *PED*. The values of physico-chemical parameters can be taken for quality assurance.

**Number of references:** (8)

**Key words:** *Punarnavadi Eye Drops, Quality Control, Standard Manufacturing Procedure.*

### INTRODUCTION

Quality control for ophthalmic products is important because it comes in contact with most sensitive part of the body i.e. eye, a high degree of precautions should be taken during and after production of product for it to avoid any hitches. The sterility of these products, as well as accuracy in the calculation and preparation is of great importance.

There are many preparations available in the global market depending on the ease of use for consumer; but in the global field, each regulatory body obeys their own specifications of their country's pharmacopoeia<sup>1</sup>.

Increased popularity of *Ayurvedic* medicines has also brought concerns and fears regarding the quality, efficacy and safety of the raw materials and final products. In spite of the existence and use of traditional medicines over many centuries, the safety, efficacy and batch to batch consistency of *Ayurvedic* formulations are not up to the mark, to meet the criteria needed to support their use worldwide<sup>2</sup>. Therefore the need of the hour is to standardize their manufacturing procedure on laboratory scale so that these observations can also be reproducible on large scale production. The present study was carried out to set the Standard Manufacturing Procedure (SMP) and preliminary physico-chemical profile of *Punarnavadi Eye Drops (PED)*.

In *Ayurved*, herbal and/or mineral drugs preparations are the tools for treat the diseases. In this study the experience based formulation of *Bhaishajya Sara Samgraha (BSS) - Fullika Drava*, modified and named as *PED* which is used to treat *netra roga* (eye disease)<sup>3</sup>. It is widely used in *Ayurved* fraternity and found very effective results in inflammatory conditions of eye. *PED* is made from one type of *Arka* (Distillation). *Arka* is classical method for obtaining active principle in liquid form from the herbal drugs which is potent than other preparation forms. In recent, pharmaceutical development takes place its higher point and can develop *Ayurvedic* drugs in more suitable form. Eye drops is more acceptable and potential form for any eye diseases. Considering this, attempt was made to prepare eye drops from *Arka* of *Punarnava* root.

## MATERIALS AND METHODS

### Procurement of raw materials :

Coarse powder of *Punarnava* (*Boerhavia diffusa* Linn.) root was procured from Pharmacy, Gujarat Ayurved University (GAU), Jamnagar and authenticated at Pharmacocnosy Laboratory. Fine powders of *Mishri* (*Saccharrum officinarum* Linn.), *Sphatika* (*Alum*) and *Saindhava* (*Sodii chloridum*) were procured from the local market and authenticated from dept. of *Rasashashtra* and *Bhaishajya Kalpana*, IPGT & RA, GAU, Jamnagar.

### Preparation of *PED* :

Preparation of *PED* can be divided in following phases:

- 1. Soaking:** The preparation area was sterilized with formalin before 24 hours of starting of preparation. For the preparation of one batch, 50 gm of UV sterilized coarse powder of *Punarnava* root was soaked in 500 ml of RO purified water for 12 hours in the UV sterilized flask of distillation apparatus. It is plugged with UV sterile rubber plug.
- 2. First Distillation:** Then another 1250 ml of water was added in it (gave 1750 ml of water). Used all glass parts were sterilized in UV chamber before use including input storage flask, condenser, elbows at junction and output storage flask, reservoir vessels, measurement vessels, funnels etc. Then distillation was started with simple distillation process with the power of the heating mantle at 80 grade. 50 ml part at the beginning of first distillation is discarded (remained 1700 ml part of water). Then 1250 ml of distillation was obtained at the end of first distillation process. From it 100 ml distillation was

separated for analytical purpose as first distillation sample, in sterile conical flask with plug. 450 ml of part of water remained with residual part.

3. **Second Distillation:** First distillation - 1150 ml was put again through distillation process and double distillation was obtained - 1100 ml. Again 100 ml distillation was separated for analytical purpose as second distillation sample. Thus one litre of distillation was prepared.
4. **Addition of Powders:** Then fine powders of *Mishri* - 25 gm, *Sphatika* - 25 gm and *Saindhava* - 25 gm was added in it. The buffer disodium tetraborate - 20 gm of standard company was also added in it and kept for 12 hours to dissolve in UV sterilised glass bottles with plug (total quantity approx. 1095 ml).
5. **Filtration:** Then it was filtered with the help of filter paper and glass funnel and stored in glass bottles with plug sterilised in UV sterilisation chamber.
6. **Sterilization and Preservation:** Then the distillation is shifted in UV sterilised conical flask and preservative benzalkonium chloride 0.2 ml of 50 % concentration available solution of standard company was added and mixed. Thus one litre of batch was prepared because of approx. 95 ml loss was done through filtration. The dropper bottles sterilised in UV sterilization chamber (each of 10 ml) were filled in sterile aseptic condition.
7. **Packaging and storage:** The bottles were stored in refrigerated condition till use. Three batches of *PED* were prepared for the standardization purpose following same procedure (**Table 1 and 2**).

**Preliminary Physico-chemical Analysis:** Physico-chemical parameters like Specific gravity<sup>4</sup>, Refractive index<sup>5</sup>, pH<sup>6</sup> and Total solid<sup>7</sup> as well as HPTLC<sup>8</sup> were carried out for all the batches as per pharmacopoeial standards.

## OBSERVATIONS AND RESULTS

*Punarnava* root was totally soaked within 12 hours. First drop of distillation was obtained after 30 minutes of starting of heating mantle. First 50 ml of distillation was discarded because it has woody smell and having no any volatile substance (active principle). Thereafter 1250 ml of distillation was obtained in four and half hours excluding rest time of heating mantle (approx. two and half hours). Hence, total seven hours required for this process. It was having watery consistency with pale yellow in color. Second distillation was more transparent than first. Contents became opaque after adding powders including buffer. After filtration, it was watery having slight turbid in color (whitish).

Organoleptically, final product was liquid, transparent with slight whitish in color, salty-astringent taste with specific odor. (**Table 4**)

Standardization with modern analytical tests plays an important role in the production of quality drugs. So it is prime importance that single method standardization must be done with specific aim. Average values of physico-chemical parameters of three *PED* samples were found identical. (**Table 5**)

High Performance thin Layer Chromatography (HPTLC) was performed for all the three batches by making Ethanol extract. Solvent system used is Toluene + Ethylacetate + Acetic Acid in the 7:2:1 ratio. For first, second and third batches 9, 10 and 9 spots are found at 254 nm and 5,5 and 6 spots at 366 nm respectively at almost same reference values. It indicates almost same number of spots and same  $R_f$  values in 254 nm and in 366 nm with in different batches. (Table 6)

## DISCUSSION

Little attention has been paid to the herbo-mineral formulation called *PED* in the area of pharmaceutical as well as clinical research in *Ayurved*. So as to explore this formulation, pharmaceutically and analytically, this study was carried out.

In this study the experience based formulation - *Fullika Drava*, mentioned in *Bhaishajya Sara Samgraha*, modified and named as *PED* has selected.<sup>3</sup> In the beginning preparation area was sterilized to avoid any type of contamination.

Coarse powder of *Punarnava* root was sterilized by washing with water and drying in sunlight as well as it was further also sterilized in UV chamber. It was soaked in water before starting distillation. So active principle of drug comes in water and it can be easy to get it via distillation process. All parts of distillation apparatus was made of glass, avoided any chance of chemical reaction.

Distillation was done with simple distillation process with the power of the heating mantle at same grade power during whole process. At the beginning a few proportion of distillate was discarded having no active principle. Every time after completing distillation process and after filtration, sample was reserved for analytical study. At the end of first distillation approx. 70 % distillation was got excluding discarded part at beginning. At the time of every distillation residual part was kept remained to avoid burning of drug which could be useless.

More transparency of second distillation suggested more purity due to further distillation. Powders added in second distillation gave opaque appearance to solution. They were not completely dissolved and sedimented at the bottom of the reservoir vessel. Addition of these powders caused decreased of pH of the solution. So buffer was added in it to maintain the pH at acceptable value. Filtered solution appeared more transparent as there was separation of undissolved parts of powders added. Addition of preservative and storing in refrigerator was done to increase shelf life of the solution (eye drops).

For all the three batches of *PED* preparation, similar amount of the proportion of the contents were taken. (Table 3) Total three days were required to complete the process.

Organoleptic characters of final product in all the three batches were liquid, transparent with slight whitish in color, salty-astringent taste with specific odor. (Table 4)

The specific gravity for the baches 1, 2 and 3 are 1.0573, 1.0601 and 1.0568. Almost same values narrate similarity in all the batches. (Table 5)

The refractive index for the batches 1, 2 and 3 are 1.3512, 1.3523 and 1.3516 gives same structure of all the batches. **(Table 5)**

The pH value of a given sample expresses the degree of acidity or alkalinity of a sample solution. All the three samples have same pH 3.5. The acidity of the drug indicates the site of absorption and action of the drug. **(Table 5)**

Total solid for the batches 1, 2 and 3 are 11.5125, 13.3570 and 12.1620 %. These values of percentage of solid part got due to the powders added. **(Table 5)**

Values of HPTLC for all batches give identical values in both 254 and 366 nm. **(Table 6)**

### CONCLUSION

The adopted method for preparation of *PED* can be considered as easy, convenient and SMP. Data obtained from the present study is reproducible. To avoid the batch to batch variation, this SMP may be applied to large scale production of *PED*. The values of physico-chemical parameters and HPTLC can be taken as standard for future studies.

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## TABLES :

Table 1: Measurement in preparation of *Punarnavadi Eye Drops*

Batch	Punarnava root	Water taken for first distillation	Discarded distillate	First distillate	Residual part (after first distillation)	Second distillate	Residual part after second distillation
1	50 gm	1750 ml	50 ml	1150 ml	450 ml	1000 ml	50 ml
2	50 gm	1750 ml	50 ml	1150 ml	450 ml	1000 ml	50 ml
3	50 gm	1750 ml	50 ml	1150 ml	450 ml	1000 ml	50 ml

Table 2: Measurement in preparation of *Punarnavadi Eye Drops* (continue)

Batch	Mishri powder	Sphatika	Saindhava	Buffer	Quantity of distillate after adding powders	Quantity of distillate after filtration
1	25 gm	25 gm	25 gm	25 gm	1095 ml	900 ml
2	25 gm	25 gm	25 gm	25 gm	1095 ml	900 ml
3	25 gm	25 gm	25 gm	25 gm	1095 ml	900 ml

Table 3: Measure of contents for one batch of *Punarnavadi Eye Drops* preparation

Sr. No.	Ingredient	Latin/English Name	Parts used	Measure	Parts	Reference
1	<i>Punarnava</i>	<i>Boerhavia diffusa</i> Linn.	Root	50 gm	1	BSS
2	<i>Mishri</i>	<i>Saccharum officinarum</i> Linn.	-	25 gm	½	
3	<i>Sphatika</i>	<i>Alum</i>	Whole	25 gm	½	
4	<i>Saindhava</i>	<i>Sodii cloridum</i>	Whole	25 gm	½	
5	Water	Aqua	-	1750 ml	35	
6	Buffer	Disodium tetraborate	-	20 gm	2/5	
7	Preservative	Benzalkonium chloride	-	0.1 ml	1/500	

Table 4 : Organoleptic characteristics of all the ingredients and final product

Material	Color	Touch	Odor	Taste
<i>Punarnava</i> ( <i>Boerhavia diffusa</i> Linn.)	Brownish	Coarse	Characteristic	Bitter
<i>Mishri</i> ( <i>Saccharum officinarum</i> Linn.)	White	Smooth	Characteristic	Sweet
<i>Sphatika</i> ( <i>Alum</i> )	Greyish white	Smooth	None	Astringent, Sour
<i>Saindhava</i> ( <i>Sodii cloridum</i> )	White	Smooth	Characteristic	Salty
Final product (PED)	transparent with slight whitish	Liquid	Characteristic	Salty- Astringent

Table 5 : Physico chemical analysis of *Punarnavadi Eye Drops*

Parameter	Batch-1	Batch-2	Batch-3	Average
Specific gravity	1.0573	1.0601	1.0568	1.0580
Refractive index	1.3512	1.3523	1.3512	1.3516
pH	3.5	3.5	3.5	3.5
Total solid (%)	11.5125	13.3570	12.1620	12.3438

Table 6 : Results of HPTLC of *Punarnavadi Eye Drops*

Sample	Extract	Solvent system	Visualize under short UV (254 nm)		Visualize under short UV (366 nm)	
			No. of spots	R <sub>f</sub> value	No. of spots	R <sub>f</sub> value
Batch 1C	Ethanol	Toluene + Ethylacetate + Acetic Acid in the 7:2:1 ratio	9	0.02, 0.07, 0.63, 0.74, 1.07, 1.21, 1.42, 1.61, 1.73	5	0.01, 0.07, 1.02, 1.09, 1.27
Batch 2C			10	0.04, 0.09, 0.36, 0.41, 0.64, 0.77, 1.06, 1.41, 1.57, 1.74	5	0.03, 0.09, 1.01, 1.09, 1.81
Batch 3C			9	0.05, 0.10, 0.65, 0.77, 0.87, 1.07, 1.11, 1.23, 1.76	6	0.05, 0.09, 1.03, 1.10, 1.28, 1.82

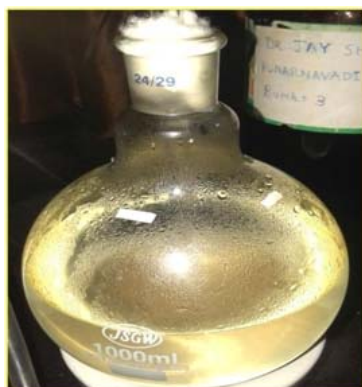
FIGURES :



Punarnava root-coarse powder



Distillation process



First distillation



First distillation at re-distillation



Second distillation



Mishri





Sphatika



Saindhava



Second distillation after adding powder including buffer



Distillate after filtration



Wash bottle for filling small bottles of 10 ml.



Filled bottles (10 ml. each)

**Clinical :**

## **The Role of Shunthi Gokshur Kwath in Amavata**

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**Abstract :**

Ayurveda being one of the most ancient pathies has concentrated on the healthy living of the human being. Also, it constitutes of management of the diseases commencing due to derangements in Kala, Artha and Karma. Pradnyaparadha is one of the kinds to be the primary cause for the pathogenesis of diseases. The eating habits of modern era and the fast life style are the most important contributing factors for Pradnyaparadha which leads to production of Ama due to the poor digestive power. Amavata is the term which is formed by two distinct individual terms i.e, Ama and Vata. Ama in simple words unripe, uncooked, raw or undigested raw or undigested form of food which plays a vital role in disease production. The signs and symptoms of Amavata can be correlated with that of Rheumatoid Arthritis. In present era, no cure or prevention is available as per as Rheumatoid Arthritis is concerned. As the etiology of the disease is unknown, the treatment empirically is directed towards the directed towards the relief of the symptoms. According to Lipsky P.E. (2008) Rheumatoid Arthritis is a chronic multiple system disease of unknown cause. There is a variety of systemic manifestations characterized by persistent inflammatory synovitis. There is cartilage damage and bone erosion. Subsequently a change in joint integrity is the hallmark of the disease.

**Keywords :-** Amavata, Pradnyaparadha, Rheumatoid Arthritis, Synovitis**No. of References :-** 4**Introduction :**

In todays fast track life nobody has the time to think of matrvat- ahar as mentioned in Ayurveda leading to Agnidushti (1). This Agnimandya is believed to be the root cause of all the diseases. There are many joint disorders; Amavata is one of the varieties of it. It is madhyammargagatvyadhi of rasavahastrotas(2). It is a type of sero-negative or sero-positive polyarthritis(3). If the disease progresses, permanent deformity can occur. The clinical presentation of Amavata closely mimics with Rheumatoid arthritis. Many theories and practical approaches have been tried to get better answer for solving this problem but being a yapyavyadhi it reappears and gives long standing suffering. Faulty diet, irregular exercise, poor economic status, excessive workload, improper lifestyle and mental stress plays vital role in influence. Sharangdhara has mentioned four types of AmAvata as; Vataj, Pittaj, Kaphaj and Sannipata.(1)

**Aims and Objectives:**

1. To study the effect of ShunthiGokshurKwath in Amavata.
2. To study the causes, pathogenesis, symptoms and pathya and apathy regarding Amavata.

**Materials & Methods:**

30 patients were diagnosed according to MadhavaNidan were selected randomly from L. K. AyurvedHospital, Yavatmal from OPD & IPD.

**Diagnostic Criteria:**

Following symptoms were graded 0-4 on the basis of severity.

	0	1	2	3
Sandhishula	No pain	Mild pain	Moderate pain	Severe pain
Sandhishotha	Absent	Feeling of swelling	Apparent swelling	Huge swelling
Stambha	No stiffness	0-9 min	10-19 min	20-39 min
Sparshasahatva	No tenderness	Says tenderness	Patient twitches	Not allow to touch
Joint score	Less than 2 joint	At least 2 joint	Involvement of 3-5 joint	More than 5 joint

**Inclusion Criteria :**

1. Patient having sign & symptoms of Amavata as per Ayurvedic texts.
2. Patient from the age group of 19-50 years old irrespective of their sex & occupation.

**Exclusion Criteria :**

Patient suffering from,

1. Vatarakta
2. Sandhigatavata,
3. Sciatica,
4. Rheumatic fever,
- 5.pregnant women.

**Overall Assessment Of Therapy :**

The effect of therapy was assessed as follows –

1. Complete relief – 100%
2. Marked relief – more than 75%
3. Moderate relief – 50 to 75%
4. Mild relief – 25 to 50%
5. No relief – below 25%

**Drug preparation and Administration:**

Shunthipowder – 5gm, Gokshur powder– 10gm in 240 ml water. Decoction was made according to Bhaishajyakalpana.

Drug Reference : Chakradatta (Amavata)(4)

Dose : GokshurShunthikwath – 30ml

Kala : Apanakala

Duration : 15 days

Diet : Diet was with Deepak-Pachakdravyas.

Follow up : Follow up was taken on 8<sup>th</sup>& 15<sup>th</sup> day.

Investigation : Hb%, RA Test, ESR done.

### Observation :

Age wise distribution of the patient :

Age	Number of patients	Percentage of patients %
19-26	3	10
Up to 34	5	16
Up to 42	12	40
Up to 50	10	33

Sex wise distribution :

Male	13	43.3%
Female	17	56.6%

Occupation wise presentation :

Office work	02	6.6%
Sedentary work	04	13.3%
Labor work	24	80%

Table showing effect on symptoms score of 30 patients :

Sr no.	Symptoms	BT	AT	Difference	Percentage%
1	Sandhishool	43	14	29	67.44%
2	Sandhishoth	43	08	35	81.39%
3	Sparshasahatva	45	14	31	68.88%
4	Stambha	49	13	36	73.46%
5	Jwara	44	13	31	70.45%
6	Joints score	22	09	13	59.09%

### Discussion :

After treatment of one month very good improvement observed in 12 patients (40%). In the 10 (30%) moderately improvement was observed and in 2 patients no any change observed.

### Conclusion :

From the study it is clear that ShunthiGokshurKwath with strictly pathya Deepak Pachakdravya is effective above 70% improvement was observed.

**Acknowledgement :**

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Clinical : **Assessment of Asthi Dhatu with the help of Modern investigations and Clinical Examinations**



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### Abstract-

The fundamental principles of Ayurved has explained the unique concepts of Tridosh (3 bio humours), Dhatu(Tissues), and Mal (Excretory products) with respect to physiology and pathology.

Asthi can be compared with ocean tissue which is parthiv element of our body. Asthi Dhatu is formed as poshak (nutrients) Asthi Dhatu carry through Purish dhara kala and is metabolised by the Asthi Agni. During metabolism of Asthi Dhatu, teeth are formed i.e. upadhatu (secondary tissue). Mal(Excretory products) of this metabolic process are the hair and nails.

As Asthi Dhatu is strongest tissue in human body. Asthi Dhatu plays importance role in human body for protection, support and movements. Now a days in medical practice seen lots of patients regarding problems with Asthi Dhatu i.e. Asthi Kshay (Osteo Arthritis, Osteoporosis, Osteo Malacia etc), Asthi Vruddhi (Osteo Chondroma). Hence, Ashti Dhatu parikshan is very important part.

Asthi Dhatu examination can be done by Ayurved and modern perspective. It can be done by anatomical and physiological way.

Total number of references - 6.

**Keywords** - Asthi Dhatu, Dant, Kesh, Nakh, Purishwah Strotas, Bone scan, Arthroscopy, Bone marrow aspiration, Bone Scan.

### Ayurved Asthi Dhatu Parikshan-

#### Asthi Saarata Parikshan -

To determine strength of Asthi Dhatu or qualitative state of osteon tissue in our body, for that Sarata parikshan can be done. If any Dhatu is weak quality in person it can be treated by giving Rasayan chikitsa. Hence, Sarata examination is one of the most important qualitative estimation of Dhatu.

**By Questionners -**

- 1) Is Bony cage of body , strong and broad ?  
Yes (Asthi saar)
- 2) Is all joints are big in size ?  
Yes (Asthi saar)
- 3) Is bone fractures by small trauma?  
Yes (asthi durbal) No (Asthi saar)
- 4) Hows growth of hairs and nail ?  
Slow and Long (Asthi saar)
- 5) Nails and hairs are big in nature ?  
Yes (Asthi saar)
- 6) In childhood, dentation of tooth is without any complications?  
Yes (Asthi saar)
- 7) Is there any need of rest after long hard work?  
Yes (Asthi saar)
- 8) After hard work without any rest, can continue work with enthusiasm?  
Yes (Asthi saar)

**Generalised clinical examination of Skeleton system -****1. Darshan ( Inspection)-**

Stance, gait, posture, activities(dressing, bending, rising of chair). Gives idea about gross deformity, displacement,tumours, pagets disease. Examine - Skull, jaw, rib cage, spinal column, each limb (compare two sides).

Observe- Joints and adjuscent tissues (bones, cartilage, synovia, bursae, tendons ligaments etc)

Inspections of joints - swelling, discolouration, deformity.

**2. Sparshan (palpitation) -**

Note raised temp over bone/joint. Raised temperature due to high blood flow (paget's disease) or inflammation (rhuematic disease). Look for tenderness, palpate consistency of any swellings, measure range of passive movements of joint. Note crepitus or abnormal mobility i.e. snow ball crunching in osteo-arthritis.

**3. Prashna pariksha -**

A doctor can ask verious questionairs

**General Functions of Asthi Dhatu -****A) Dharan ( Protection & Stability) -**

It is very important function of Asthi Dhatu i.e. protection, mineral storage, blood cell production . As vital organs like heart and lungs are protected by bony cage. Parthivatva of Asthi Dhatu comes due to calcium and phosphorous mineral storage. Bony joints are part of Asthi Dhatu,

because of bones and joints body get stability. Bones of skull & rib cage protects internal organs from injury.

Bones can be tested by -

### **X-Rays**

X-rays are most valuable for detecting abnormalities in bone. It can be taken to evaluate painful, deformed or suspected abnormal areas of bone. Often, x-rays can help to diagnose fractures, tumors, injuries, infections, and deformities (such as congenital hip dysplasia). Also, sometimes x-rays are helpful in showing changes that confirm a person has a certain kind of arthritis (for example, rheumatoid arthritis or osteoarthritis). To determine whether the joint has been damaged by injury, a doctor may use an ordinary (non-stress) x-ray or one taken with the joint under stress (stress x-ray).

### **Arthrography**

It is an x-ray procedure in which a radiopaque dye is injected into a joint space. It helps to outline the structures, such as ligaments inside the joint. Arthrography can be used to view torn ligaments and fragmented cartilage in the joint. However, MRI is now generally used in preference to arthrography.

### **Dual-Energy X-Ray Absorptiometry (DXA)**

The most accurate way to evaluate bone density, which is necessary for diagnosing of osteopenia or osteoporosis is with DXA . DXA is also used to predict a person's risk of fracture. This test is quick, painless and involves very little radiation. In this test, x-rays are used to examine bone density at the lower spine, hip, wrist or entire body. When screening for osteoporosis, in it prefer taking measurements of the lower spine and hip.

### **Computed Tomography (CT) and Magnetic Resonance Imaging (MRI)**

C.T.Scan & MRI give much more detail than conventional x-rays and may be done to determine the extent and exact location of damage.

These tests can also be used to detect fractures that are not visible on x-rays (such as small fractures of the hip and pelvis). MRI is especially valuable for imaging muscles, ligaments and tendons. MRI can be used if the cause of pain is thought to be a severe soft-tissue problem (for example, rupture of a major ligament or tendon or damage to important structures inside the knee joint). CT is useful if MRI is not recommended or unavailable. MRI is more expensive than CT.

### **Ultrasonography**

Ultrasonography (USG) is being used more and more frequently to identify inflammation in and around joints and tears or inflammation of tendons. USG is also used as a guide when a needle needs to be put into a joint (for example, to inject drugs or to remove joint fluid). As an alternative to CT and MRI, USG is less expensive and unlike CT, involves no exposure to radiation.



**Bone Scanning**

Bone scanning is an imaging procedure that is occasionally used to diagnose a fracture, particularly if other tests, such as plain x-rays and CT or MRI do not reveal the fracture. Bone scanning involves use of a radioactive substance (technetium-99m–labeled pyrophosphate) that is absorbed by any healing bone. The procedure can also be used when a bone infection or a tumor that has spread from a cancer elsewhere in the body is suspected.

**B) Mineral storage-**

Bone serve as reservoir of Calcium & phosphorous essential minerals.

**Laboratory test -**

Sr. calcium, sr.phosphorous, vit.D is needed for normal indivisual and in diseases like Osteoporosis, Osteomalacia. Sr.Alkaline phosphatase increased in bone disease, Sr. phosphorous increased in bone metastasis.

Sometimes Thyroid profile( T3, T4, TSH) may be tested. Parathyroid hormone( PTH) is increased in Osteo Malacia,rickets and vit.D deficiency.

**C) Blood cell production-**

Production of blood cells i.e haematopoiesis occurs in red bone marrow found within cavities of certain bone.As quality and quantity of blood cells production is depend on Asthi Dhatu (Bone marrow),can be take as its Dharan function. For examine normal or abnormal blood production there have to do **Bone marrow aspiration and FNAC.**

**Bone marrow examination -**

It is the pathological analysis of bone marrow obtained via biopsy and bone marrow aspiration. Bone marrow examination is used in the diagnosis of conditions including leukemia, multiple myeloma, anaemia and pancytopenia. It is sometimes necessary to examine the source of the blood cells in the bone marrow to obtain more information on heamatopoiesis. The ratio between myeloids and erythroid cells is relevant to bone marrow function. The normal myeloid-to-erythroid ratio is around 3:1; this ratio may increase in myelogenous leukemias, decrease in polycythemias and reverse in cases of thalassemia.

**D) Support -**

Bones is framework,which gives attachment to muscles & tendons. As Asthi Dhatu is protective to Sandhi. It gives support to joints and protects by injury. Joints can be tested as it is supported by bones.

Joint Examinations-

**1) Joint Movements-**

Movements can be examined by severity index-

0=not restricted

1=slightly restricted

2=markedly restricted

## 2) Joint tests-

### Joint Aspiration

Joint aspiration (arthrocentesis) is used to diagnose certain joint problems. It is the most direct and accurate way to determine whether joint pain and swelling is caused by an infection or crystal-related arthritis (such as gout). Aspirates joint fluid (synovial fluid) and examines the fluid under a microscope. Note its color and clarity. Other tests, white blood cell count and culture are done on the fluid & make diagnosis after analyzing the fluid. For example, fluid may contain bacteria, which confirm a diagnosis of infection. It may contain certain crystals, if finding uric acid crystals confirms a diagnosis of Gout. Calcium pyrophosphate dihydrate crystals confirm a diagnosis of Pseudo gout .

### Arthroscopy -

It is a procedure in which a small (diameter of a pencil) fiberoptic scope is inserted into a joint space, to look inside the joint. The skin incision is very small. During arthroscopy can take a piece of tissue (such as joint cartilage or the joint capsule) for analysis (biopsy). If necessary, do surgery to correct the condition. Disorders commonly found during arthroscopy include inflammation of the synovium lining of joint (synovitis); ligament, tendon, or cartilage tears and loose pieces of bone or cartilage. There is a very small risk of joint infection . Recovery time after arthroscopic surgery is much faster than traditional surgery.

### Asthiwah Strotas Mul Sthan -

In Ayurvedic context, Mul Sthan of each Dhatu / Strotas is its production (Nirmiti Sthan),controlling (Niyaman) and examination (parikshan sthan ) concerned. Hence, Mul sthan examination is important by pathophysiological point of view.

1) **Meda (Fat cells)**- In Ayurveda Med is Mul sthan of Asthivah Strotas. In Modern literature, Bone marrow has osteocytes and adipocytes (fat cells). An imbalance in the osteogenesis and adipogenesis of bone marrow cells is a crucial pathological factor in the development of osteoporosis. Hence, adipocytes can be taken as Mul Sthan of Asthi Dhatu.

Test - Bone Marrow Adipose Tissue (BMAT). It is well-recognized that adipokines and free fatty acids released by adipocytes can directly or indirectly interfere with cells of bone remodelling or hematopoiesis. In pathological states such as osteoporosis, BMAT quantity is well-associated with Bone Marrow Density. BMD loss in aging, menopause, etc. Hence, **Bone marrow density** can be tested.

2) **Jaghan (pelvic region)**- As jaghan can be take as pelvic region is Mul sthan of Asthivah Strotas. As Pakwashay is situated in this region that is Vaat sthan . Asthi Dhatu and Vaat has Ashray-Ashrayi relation, both poshya and poshak vaat is situated in pakwashay it provides nutrition & production of Asthi Dhatu. By modern physiology passive, paracellular absorption of calcium occurs in the jejunum and ileum of large intestine. As bones have 99% calcium, it comes from large intestine i.e. Jaghan.

Sample for Bone marrow aspiration and Biopsy is taken most commonly from pelvic region iliac crest. **Pelvimery** can be done. Clinical pelvimetry refers to assessment of pelvic size. Clinical pelvimetry can be done to predict mode of delivery in primigravidae.

### **Updhatu parikshan -**

Updhatu is produced along with Dhatu production. Dhatu provides nutrients to Updhatu, if any pathology develops in Dhatu which also affects on its Updhatu. Hence, Updhatu examination is necessary as it has importance. Sharngdhar given Danta is Updhatu of Asthi Dhatu.

### **Danta (Tooth)-**

As Danta is updhatu of Asthi Dhatu. In Ayurveda -appearance of Danta colour, its size, arrangement pattern, its quality which can assume quality of Asthi Dhatu inside body by Anuman Praman. If teeth are large, straight and white in healthy state of Asthi Dhatu.

Modern examinations are methods of Vitality Testing given below -

#### **1. Electric Pulp Testing**

This involves sending an electric current through the patients tissues to assess the pulp vitality. The sensation will quickly disappear when the stimulus is removed. When the sensation lingers, it signifies stimulation of C fibers, and irreversible pulpitis. No response means that nerve is non-vital.

#### **2. Cold**

Whether it is Ethyl Chloride or a good ice stick. A sensation that lingers indicate a pulpitis, no sensation indicates a non-vital tooth.

#### **3. Hot**

It suggest hot isolating with rubber dam and immersing the tooth with hot water. The test results are similar to that of electric pulp testing.

#### **4. Tooth Discolouration**

Not strictly a test, but discolouration of the tooth can indicate pulpal hemorrhage, necrosis, micro leakage from enamel, crazing or leaking restorations in pulp chamber.

### **Asthi Dhatu Mala (excretory products) -**

Mal is excretory part produced along with metabolism of Dhatu. In Ayurved, Kesh (hairs), Nakha(Nail) is Mal of Asthi Dhatu. By examining the hair, nails and teeth the practitioner can assume the state of the Asthi Dhatu. When Asthi Dhatu is in healthy state, hair density becomes full and nails are thick.

### **Kesh (Hair) Examination -**

Ayurved says kesh parikshan, appearance of hair whether dry/shiny, easily breakable, quality of hair. In modern, hair can be tested by -

**1) Hair analysis** - It will take a sample of your hair and examine it under a microscope. A scalp sample might also be taken.

**2) Blood tests** - Including testing for a specific condition, such as an overactive or underactive thyroid gland (hyperthyroidism or hypothyroidism). This may help uncover medical conditions related to hair loss, such as thyroid disease.

**3) Pull test** - Expert can gently pulls several dozen hairs to see how many come out. This helps determine the stage of the shedding process.

**4) Scalp biopsy** - Expert scrapes samples from the skin or from a few hairs plucked from the scalp to examine the hair roots. This can help to determine whether an infection is causing hair loss.

### **Nakha (Nail) -**

In this study relation between Asthi Dhatu and Nakha can be taken. As Nakha is updhatu of Asthi Dhatu, it can be examined by Ayurved Anuman Praman. Previous studies indicate that fingernail thickness correlates with vitamin D status. Simple Sr.vit D tests helps to identify patients with vitamin D deficiency.

Healthy fingernails are smooth and well shaped. If notice any abnormality, it indicates imbalance in underlying system which can lead to disease. Examination of nail is important physical examination during the detail history taking of patient. Following are Modern examinations -

\* A fungal culture - This can show which type of fungus is present.

\* KOH test shows that there's a fungus present nail damage or fungal nail infections.

### **Keratin test -**

It is the protein that is found in the natural nail. This protein is also found in the hair and the skin. In the nails, it is harder than in the hair and skin. A healthy nail will be white and the nail section over the nail bed will be pink in color. Nails are more porous than skin. A nail that does not have sufficient water will be brittle and will be easy to break.

### **Asthi Dhatu Kshay & Vrudhi -**

#### **1) Asthi Kshay -**

Dwija prapatana (Falling of teeth), Asthi Shula/tod , Danta and Nakha bhanga(fracture of teeth).

Asthi kshaya can be co-related to deficiency of calcium, phosphorus in Asthikshaya (osteoporosis), osteomalacia, Rickets(vit.D deficiency) etc. It also can be tested by Sr. Calcium, Sr phosphorous, sr.vit.D3.

#### **2) Asthi Vrudhi -**

In Ayurved, Asthi vrudhi is Adhyasthi (bony- hypertrophy), Adhi Danta i.e. crowded teeth and calcaneal spur. Crowded teeth can be examined by Dental X ray ,head and skull x-ray or facial x ray. Calcaneal spur can be tested by x-ray, bone scan.

Now a days bone tumour can be considered as Asthi Vruddhi. That can be tested by Frozen sections of bone tumours, FNAC (fine needle aspiration cytology) and immunohistochemistry (IHC). IHC is process of detecting antigens i.e. proteins in cells of a tissue section.

### Relation between Purisha Dhara Kala and Asthi Dhatu -

The Purisha Dhara Kala is the membrane that holds the Asthi agni. Purisha means “feces”. The term is also used to describe the large intestine as in the Purishavaha strotas.

Acharya Dalhan says, there is intimate relation between Asthidhara kala And Purishdhara kala. Here lies an important clue of the relationship between health of the large intestine and that of the bones. The large intestine is the home site of vata dosha. The close relationship between these two tissues reveals the susceptibility of the bones to vata disorders. In College of Ayurveda And Research Centre, Akurdi under guidance of Dr.R.R.Deshpande sir, Dr.Rohit Patil concluded that there is relation between Purishdhara kala (Bowel) and Asthidhara (Bone density) kala. This relation is useful for treatment of various diseases of bone and joints. Hence, regularity of bowel can be asked during history taking of patients, which can give clue about bone density.

Pathological test related to Bone health & its approximate cost -

No.	Pathological blood test	Normal value	Approx. cost
1.	Sr.Calcium	8.4-10.4mg/dl	200/-
2.	Sr.phosphorus	2.4-4.1 mg/dl	300/-
3.	Sr.vit. D3	30-50ng/mL	1400/-
4.	Tyroid profile T3 T4 TSH	100-200ng/dL 5-14mcg/dL 0.4-4.0 mIU/L	500/-
5.	Sr alkaline phospatase- Adult male Adult female Infants	50-128IU/L 42-98IU/L 50-420IU/L	300/-
6.	FNAC	—	2000/-
7.	Bone marrow examination Histopathology	—	4000/-
8.	Parathyroid(PTH)	10-55pg/mL	14000/-

Modern investigation can be done for diagnosis of bones and joints disease.

No	Investigations	Approx. Cost.
1	X rays	300-500/-
2	DXA	1000-2000/-
3	Arthrography	1000-2000/-
4	Arthroscopy	2000-4000/-
5	Joint aspiration	1000-2000/-
6	CT scan- plane contrasts	2500-4000/- 3500-6000/-
7	MRI without contrasts- With contrasts-	6000-12000/-
8	Bone scanning	4000/-
9	Ultrasonography of joint	1000/-
10	Bone density test-	900-3500/-

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**Clinical :**

## **Study of selected Four Yogasanas in Sthaulya**

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**Abstract**

In modern era with continuous changing lifestyle, environment and changed diet habits, man has become a victim of many diseases and obesity is one of them. Today, people have a wrong way of living. Yogic exercises activate the digestive system and produce a sufficient quantity of digestive juices improving the appetite, completedigesting the food, resulting in vigor and improving immune system. If people follow ayurvedic guidelines i.e. diet, yoga and lifestyle, it should be comprehensive and cost effective preventive alternatives.

(Total Reference No. 8)

Keywords – Obesity, Yogasana

**Introduction**

Modern era of science & its discoveries are due to the drastic change in the life styles & living environment, Change in food habits sedentary lifestyle, stressful environment etc., are a bane to modern era. In combination with the reduced physical activity, increased consumption of energy, nutrient poor foods containing high levels of sugars and saturated fats, have leads to the increase inabdominal girth and increased weight. In India obesity is the second important cause of humandeath, smoking being the first.

Yogic exercises activate the digestive system and produces sufficientquantity of digestive juices improving the appetite, they complete digesting the food which results in vigor and improved immune system.

The daily asanas are a must for keeping the body fit and pure.

The goal of treatment should be to achieve and maintain a "healthier weight" not necessarily an ideal weight.

**AIMS AND OBJECTIVES****AIM:**

To study the efficacy of selected Yogasanas in Sthaulya.

**OBJECTIVES :**

1. To review literature and research done on yogasanas in sthaulya.
2. To study the effect of Yogasanas on weight and associated symptoms of sthaulya.
3. To study the effect of the selected Yogasanas on overall improvement in health of the sthaulya patients.

**MATERIAL AND METHODOLOGY:**

**Study Design:-**An open, randomized, comparative, clinical study.

**MATERIALS :**

1. Diagnosed cases of sthaulya
2. Place – clean, calm well-ventilated room.
3. Equipments – cotton carpet 1 x 3 meters
4. Case taking- consent, history, physical examinations were done according to the case paper.
5. Asanas – Asanas were selected from the authenticated yoga texts. Opinion of orthopaedic surgeon and Yoga experts were taken.

**METHODOLOGY :**

In the present study, clinical trial was conducted for assessment of efficacy of Yogasanas. Yogasanas have been described for the management of sthaulya.

1. Subjects were randomly enrolled from Seth Tarachand Hospital Pune.
2. Special Performa of case paper was prepared for study.
3. Subjects were divided in two groups in Group A and Group B.  
Group A – Diet, lifestyle, Yogasanas  
Group B – Diet, lifestyle
4. Yoga should be practiced in well-ventilated room with comfortable dress.
5. Asanas should be practiced on an empty stomach early in the morning(6 am to 8 am) or three hours after a major meal or after 1 hour of liquids.
6. Session starts with –
  - (a) Omkara (5 to 10 sec – 5 times)
  - (b) Conditioning Exercises –(5 counts each)
  - (c) Yogic postures along with yogic breathing (1/2 to 1 min each)All the following are performed for minimum 5 counts to one's capacity.

**Asanas :-**

- (1) Pashchimottanasan
- (2) Pavanmuktasana
- (3) Bhujangasan
- (4) Hastapadasana



7. Findings were recorded before and after the clinical trials.

■ **DURATION :**

Each patient were observed for Two months (60 days)

Follow up were taken on 15, 30, 45, 60 days.

■ **INCLUSION CRITERIA :**

1. Age between 30 years to 50 years.  
(As obesity is observed in this age group normally)
2. Patients were included irrespective of sex and economic status.
3. Diagnosed cases of Sthaulya were included.
4. Standard height and weight chart, BMI were considered.  
BMI range > 25 – 39.5 (Grade I and II) Included.
5. Patients ready for trial.

■ **EXCLUSION CRITERIA :**

1. Age less than 30 years and above 50 years.
2. Pregnant woman were excluded.
3. Patient with severe illness viz., Diabetic Nephropathy, CCF, ARF etc.
4. Patient suffering from any other systemic disorder were excluded.
5. Patient with secondary causes of Sthaulya were excluded.  
BMI range > 39.99 (Grade III)

■ **CRITERIA FOR ASSEMENT:**

**I. Subjective parameters**

1. Daurbalya (General weakness)
  - 0 No feeling of weakness.
  - 1 Feeling of weakness at moderate exertion.
  - 2 Feeling of weakness at day to day work.
  - 3 Always feeling of fatigue or weakness without physical exertion.
2. Dargandhya
  - 0 No foul body smell.
  - 1 Occasional foul body smell.
  - 2 Always foul body smell.
  - 3 Always foul body smell to person near physical contact.
3. Swedabadha
  - 0 Normal sweda.
  - 1 Perspiration in all seasons at physical exertion.
  - 2 Perspiration in all seasons at day to day work.
  - 3 Excess perspiration in all seasons on physical exertion.

4. Kshudhatimatra
  - 0 Normal Kshudha.
  - 1 Mild increase in daily food intake.
  - 2 Moderate increase in daily food intake.
  - 3 Double the food intake compared to normal daily intake.
5. Pipasatimastra
  - 0 Normalpipasa
  - 1 Mild increase in daily water intake.
  - 2 Moderate increase in daily water intake.
  - 3 Double the water intake compared to normal daily intake.

**OBJECTIVE PARAMETERS :**

Body weight measurement.

- ISI mark weighing machine.
- Patient should be on empty stomach at least for 3 hours.
- Patients were asked to evacuate the bladder and bowel before taking weight.
- Weights were taken with minimum clothing or same type of dress.

**BMI :**

Standing height was measured BMI calculation (Quetelet's index) wt. in kg / (Ht. in meters).

**Circumference:**

Waist – Measured in mid-point between lower border of rib cageband iliac Crest in cm.

**Discussion :**

According to Hathyogpradipika effect of Paschimottansana, Bhujangaasana, Hastapadasana and Pawanmuktasana on Udar is to develop karshayta. In these asanas, muscles are passively stretched, visceral organs are subjected to the pressure changes brought in the intra-abdominal cavity. Static stretching of muscles and pressure on intra-abdominal organ increases blood circulation and helps to dissolve fat. Also, the Diet plays an important role in this condition with yogasanas. Foods with high calorie like sweets, deep fried items etc. are strictly prohibited as they add load of fat in the body. Prescribed diet chart includes more salads in diet. As salads are rich source of fibres, these fibres help to decrease the absorption of lipids at intestinal level, so it reduces the cholesterol level.

Proper diet, modified lifestyle brings the regulation in circadian cycle, which is more useful for metabolism of fat. So yogasana, diet and lifestyle can work more effectively together in obesity. Thus Yogasanas and pathyakaraahara showed synergistic action to decrease abdominal girth in obesity. Yogasanas, Diet, Lifestyle group was more effective than Diet, Lifestyle group in obesity.

**CONCLUSION :**

1. Yogasana and diet together works more effectively as compared to only diet and lifestyle modification in obesity of many parameters.
2. The effect of yoga and diet together was better on weight, BMI, WHR, Atikshudha, Daurbalya, Swedadhikya, kshudrashwas.
3. We can say that, the Yogasanas, diet and lifestyle modification works more effectively in the management of Sthaulya (obesity).

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Clinical : **A Clinical Study To Assess The Efficacy  
of Nyagrodh Vati in Hairline Fracture  
(Asthibhanga)**



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**Abstract :**

In this modern world of industrialization we are compromising our basic need of nutrition also cases of trauma are increasing as era becoming fast. Its leads into the hairline fracture physiological as well as pathological.This is the stress fracture now slowly becoming an infamous dilemma as more than 1million cases reported in India per year. Hairline fracture are minute crack on bone due to repetitive strain and excessive training.

The main treatment for any fracture is to immobilize for almost one or one and half months. In the classical text of Ayurveda we found many plants for fracture healing in BHAGNASANDHAN GAN. Nyagroth also one of them which helps in callos formation by inducing the periosteum membrane. Along with the POP cast it gives faster bone healing in 7-10 days which is more important.

Therefore this topic is selected for the scientific study

Key words- Hairline Fracture, Bhagnasandhan, Nyagroth,Ashtibhagn

TOTAL NO OF REFERANCES USED (05)

**1. INTRODUCTION**

**Shalyatantra**, one of the branch of AYURVEDA, which is devoted to surgical specialty Trauma is one of the basic cause of injury which results in to the fracture.

Now a days trauma has become main cause as there is the wide spread of industrialization, where incident of accident resulting in fracture n soft tissue injury is higher.

A Fracture is complete or incomplete break in continuity of bone

Or crack microscopic i.e HAIRLINE or macroscopic

Ayurvedic text have illustrated fracture as discontinuity of bone due to pressure. Fracture is classified in many parts of view, **HAIR LINE FRACTURE** is also one of the part of it.

Incidence of long bone fracture is higher thus demands special attention. The Management of long bone fracture runs as

**3R, 1. REDUCTION 2. RETENTION 3. REHABILITATION**

Even after following this principle fracture may leads into its complication such as malunion, non union, shorting of limb etc.

According to the modern principle of treatment it includes fracture is reduce immobilized & then role of medicine is very negligible only some NSAIDS n calcium supplements are given to fulfill the symptomatic demands. But in ancient treatment they had mentioned so many indigenous compounds which helpful in healing of fracture

With reference of **ASHTANG HRIDAYA su.15 AND SUSHRUT SAMHITA su.38**

A indigenous herb named **NYAGROTH** is also praised for **BHAGNSANDHANA** i.e. fracture healing hence the present study is proposed To study the efficacy of Nyagrodh in healing of fracture.:

**2. AIMS AND OBJECTIVES**

- 1) TO STUDY EFFECT OF NYAGRODH IN BHAGN SANDHANA
- 2) TO EVALUATE THE EFFICASY OF NYAGRODH IN CALUS FORMATION
- 3) TO EVALUATE THE EFFECT OF NYAGRODH IN SERUM CALICIUM LEVEL

**3. MATERIAL AND METHODS-****1) SOURCE OF DATA**

- A.** Patients with simple long bone hairline fracture will be selected from Ashwin Rural Ayurvedic College and Hospital, Manchi Hill
- B.** Samhita, modern books of surgery, orthopedics, physiology and pathology
- C.** Journals, Magazines, Seminars, Conference, Digital library, web sites
- D.** Pathological Radiological lab

**2) MATERIALS REQUIRED FOR STUDY**

Drug manufacturing- Nyagrodh churn vati Prepared as per classical reference of Sharangdhar Samhita under the supervision of Rasshashtra and B.K. Dravyaguna Department of Ashwin Rural Ayurvedic College and Hospital, Manchi Hill

DRUG STANDARDIZATION-Standardization of drug will approved and taken from authentic lab

Nyagrodh Latin name **FICUS BENGALANSIS**

Family **MORACEAE**

**INCLUSION CRITERIA :**

1. Simple Hairline fracture of long bone diagnosed by x ray
2. Pt between 25-40 age group irrespective of sex

**EXCLUSIVE CRITERIA:**

1. Pt below 25-above 40yrs of age
2. known case of systemic diseases (HIV,TB)
3. Multiple compound continuous fracture
4. Fracture associated with visceral injury

**4. DESIGN OF STUDY**

Patient will be examine thoroughly and radiograph will be used for diagnosis After confirmation patient will be registered in the OPD of college hospital and divided in to two equal groups

A total of 60 diagnosed patients were randomly assigned in to two groups.

**Group1 control** one having 30 patients treated with MODERN BASIC TREATMENT OF HAIRLINE FRACTURE and

**Group 2 Trial** 30 patients treated with NYAGRODH CHURN VATI

Consent will be obtained from the patients who are register for trial

Initially all the patients will treated with reduction and immobilization during the treatment patients will regularly observed changes will noted in case paper The observation will be analyzed on the basis of assessment parameters both subjective and objective critically and scientifically before during and after the treatment 0-7-14-21-28 days finally result will be statistically evaluated for significance

**ADMINISTRATION OF DRUG-**

1. NYAGRODH CHURN VATI BD WITH HONEY AFTER MEAL

DURATION : Treatment will be continued till 21 days

Bheshajkala : Pashchat Bhakt

Follow Up : After Every 7days Total Patient:60

**Treatment Plan****A) Experimental GROUP** Nyagrodh Churn Vati

Nyagrodh described as BHAGNASANDHANA IN SUSHRUT SAMHITA

TREATMENT	DAYS	FORM
1. NYAGRODH VATI	21	VATI WITH MADHU
2. POP CAST	21	—

**B)CONTROL GROUP CALCIUM SUPPLIMENT**

Classical modern treatment for HAIRLINE fracture

TREATMENT	DAYS	FORM
1. CALCIUM	21	TABLET 500MG
2. POP CAST	21	--

**Discussion:** A Pilot case study and action of NYAGHOTH VATI

There are various stages of fracture healing Inflammatory phase-Granulation tissue-Calus formation-Remolding phase. The POP cast suppresses excessive inflammation and induces healthy granulation tissue formation by maintaining the proper perfusion. The calus formation depends on the periosteum which is a connective tissue membrane also precursor of chondroblast and osteoblasts. Here Nyagroth helps in repairing the periosteum membrane which leads into osteoblast formation. In case of Tb.Calcium it needs normally 20-25 days for calus formation While Nyagroth induces calus formatin in 7-10 days live a catalyist. Which is important in hairline fracture healing also.

It shows the efficacy of NYAGROTH VATI in hairline fracture.

On the other hand it is also helpful in simple osteoarthritis and post menopausal arthritis.

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**Clinical :** **To assess and co-relate the classical  
'NADI PARIKSHAN' with modern  
parameter with special reference to  
sthan, vega and bala of Nadi**



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### **INTRODUCTION :**

Nadi Parikshan / Pulse Diagnosis is the ancient art & science of detecting the existing state of persons body, mind, soul, & spirit. Nadi is that vital flow of energy or life that courses through as a subtle channel all over the body and enables the Vaidya to feel the way the blood flows from heart. Thus helps an Ayurvedic, experienced doctor to diagnose or treat various ailments or to prevent their occurrence.

Nadi is a perception of pulsating arteries at various places in the body. Character of Nadi is helpful in assessing a physiological & pathological state of patient. It changes due to diurnal & seasonal variations & diet.

In 'Nadi Parikshan' the word 'Nadi' refers to the radial artery.

### **Origin of Pulse Diagnosis :**

Pulse diagnosis in Ayurved is mentioned for the first time in the book 'Bhav Prakash' written about 700 years ago by 'Bhav Mishra', well-known Ayurvedic physician of South-India. His book describes the nature of pulse & pulsation style readings. The nature of the pulsating movement and style is compared with the movement of the smaller animal and creatures, like snails, birds, frogs etc.

'Bhrihatrayi' of Ayurved do not provide any reference for Nadi Parikshan.

In Laghutrayee 'Yogaratnaka' & 'Sharangdha' elaborated in detail about procedures & explanations regarding Nadi Parikshan.

### **STATEMENT OF PROBLEM :**

As per procedures desired for pulse examination in Ayurved & as per possible observations, it can be seen that they are totally subjective in nature. Even though one is advised to feel for force, temperature, and consistency etc. of the pulse, their description is totally subjective in nature. To overcome this problem, it is necessary to convert the subjective finding into objective one.

If these findings viz. feel, force, temperature, consistency etc can be converted into objective



form, then it will be possible to establish typical norms, by which diagnosis based on objective parameters will be possible.

The objective parameter like the graph being sketched across the screen of the computer, the pulse has its own rate, crest, wave, amplitude & cessation. These individual characteristics define the overall movement, quality & rhythm of pulse. In these broader categories of doshas of Vata, Pitta & Kapha can be distinguished based on the smaller movements sketched graphically.

So it is decided to co-relate the observations of the findings of 'Nadi' by Ayurvedic Classical method & the reading of pulse examination with Finger Plethysmography.

#### **Location of Radial Artery :**

The radial artery passes on to the dorsal aspect of the carpus between the lateral carpal ligament and tendons of abductor pollicis longus and extensor Pollicis Brevis. It is palpable between Flexor Carpi Radialis medially and salient anterior border of Radialis.

#### **AIM & OBJECTIVES :**

##### **AIM :**

To define Nadi under various states of the body, with the help of classical Ayurvedic method and Finger Plethysmography method and establish objective parameters for it.

##### **OBJECTIVES :**

- ❖ Review of Literature on Nadi and Nadi Parikshan.
- ❖ Examine the Nadi of Healthy volunteers and indoor, sick Persons.
  - A. By Conventional Ayurvedic Method.
  - B. By Finger Plethysmography method
- ❖ Validate
  - A. Ayurvedic parameters of Nadi.
  - B. Utility of instrument for Nadi Parikshan

##### **METHODOLOGY :**

##### **CLASSICAL AYURVEDIC METHOD :**

For examination of the nadi by Ayurvedic method the three fingers of the right hand i.e. index (vata) middle (pitta) and ring (kapha) fingers were placed at the root of the thumb, over the radial artery side by side without gap and the character of the nadi was perceived by changing the pressure exerted by the finger tips over the artery. The pressure was increased from the ring finger to the index finger and reverse to augment the feel of the nadi under the fingertips. The perception of the nadi under the fingers was recorded as Vata, Pitta, and kapha nadi. An attempt was made to memorize the character of the nadi like vega, gati and bala. Samata was judged as a heavy and strong movement under all the three fingers. The results of the nadi parikshan were immediately recorded in a previously made recording data sheet.

**INSTRUMENTAL METHOD (FINGER PLETHYSMOGRAPHY) :**

At the same time, a finger plethysmograph was taken of that same student with the instrument 'SAMIKSH' a multiparameter patient monitor. The sensor of that plethysmogram was applied to the index finger of the same hand that was being examined classically. The photo-print of that plethysmograph was taken for the period of 8 seconds, which contained 8 to 20 pulse waves. Data like name, date and time, and the characters of Nadi like Rate, Amplitude, Rhythm (Regular/ Irregular), etc. were traced & recorded graphically and converted into measurable parameters by using Finger Plethysmography (Photoelectric Plethysmography) with the help of Samiksha-Multi Parameter Patient Monitor.

**REASON TO USE THIS METHOD :**

- (A) With this instrument the graph of the volume of the blood is plotted according to flow of blood. 'Nadi' is nothing but the pulsations produced by the blood flow. So the nadi may be correlated with the recordings of the Plethysmograph plotted by the instrument.
- (B) This method is noninvasive, dynamic, objective, cost effective, reproducible, real time & recordable.

The purpose of pilot study was to standardize the pulse examination or pulse recording method, both as described in Ayurvedic texts and by recording with finger plethysmograph.

The study was conducted among 95 students of both gender of B.S.D.T.'S college of Ayurved, Wagholi, Pune. Who were physically fit and certified by the physician.

Female candidates who were in menstrual phase were excluded

**PLAN OF WORK :**

**Stage 1<sup>st</sup> :** Nadis of the selected candidates were examined by classical and instrumental method, between 08.00 A.M. to 10.00A.M. and the findings were recorded.

**Stage 2<sup>nd</sup> :** All the above candidates were asked to do exercise (running/ sit-ups) till they need to respire orally (sign of *Ardhashakti Vyayama*). Immediately after this, their nadis were examined classically and instrumentally. The observations were recorded.

**Stage 3<sup>rd</sup> :** All the above candidates were asked to take their full meal. After the meal, within 2 Hrs. of time period, their nadis were examined classically and instrumentally. The observations were recorded.

In this project study, according to Ayurvedic views, Nadi Parikshan was done with the help of following parameters:

- ❖ Vega
- ❖ Sthan
- ❖ Bala

	VATA PULSE	PITTA PULSE	KAPHA PULSE
Bala	Fast, feeble, cold, light, thin, disappears on pressure	Prominent, strong, high amplitude, hot, forceful, lifts up the palpating fingers.	Deep, slow, broad wavy, thick, cool, warm, regular
Location	Best felt under the index finger	Best felt under the middle finger	Best felt under the ring finger
Gati	Moves like a cobra	Moves like a frog	Moves like a swimming swan

### Digital/Finger Plethysmograph:

Plethysmograph applied to a digit of the hand or foot to measure arterial blood flow.

### Principle and Mechanism of Photoelectric Plethysmography :

The Photoelectric Plethysmography operates on the principle that volume changes in a digit/ finger result in changes in the optical density through and just beneath the skin over a vascular region. A light source in an opaque chamber illuminates a small area of the fingertip to which the transducer is applied. Light scattered and transmitted through the capillaries of the region is picked up by the Photocell, which is shielded from all other light. As the capillaries fill with the blood (with each pulse), the blood density increases, thereby reducing the amount of light reaching the Photocell. The result causes resistance changes in the Photocell that can be measured on a Wheatstone bridge and recorded. Pulsations recorded in this manner are nothing but "true" Plethysmograph. In this activity the pulse rate is measured via an Infrared LED (Light Emitting Diode) and Phototransistor detecting, by the absorption/ reflection of the IR radiation, the change of blood volume in the capillary produced following each heartbeat.

The pulse is a wave transmitted by increased pressure, which passes along the arteries during each heartbeat. The expansion and elongation of arterial wall due to pressure variation is a passive process. This arterial pulse wave depends on intermittent blood flow from heart to periphery. The resistance encountered by the blood flow and the elasticity of the blood vessel.

For clinical purposes Radial pulse is an accepted choice, as it is easily palpable due to its situation against the bone (Radius). During palpation of a pulse its frequency, rhythm, tension and character and the condition of arterial wall are noted.

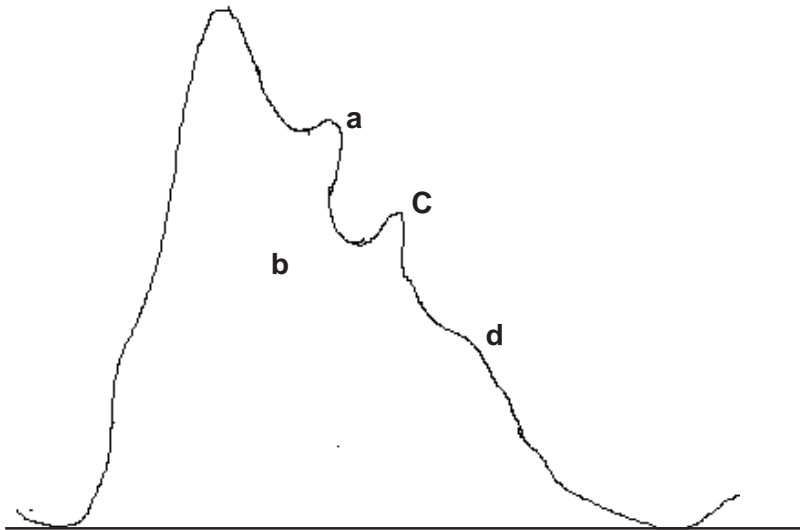


Fig.: - Radial pulse tracing

**OBSERVATIONS :****Table 1 : Comparison of dosha and vega before exercise in study group**

Dosha	Vega/min			Total
	40 - 60	60 - 80	>80	
Kapha	0	10	8	18
Pitta	0	12	34	46
Vata	0	0	31	31
Total	0	22	73	95

$$\chi^2 = 20.18, P < 0.0001$$

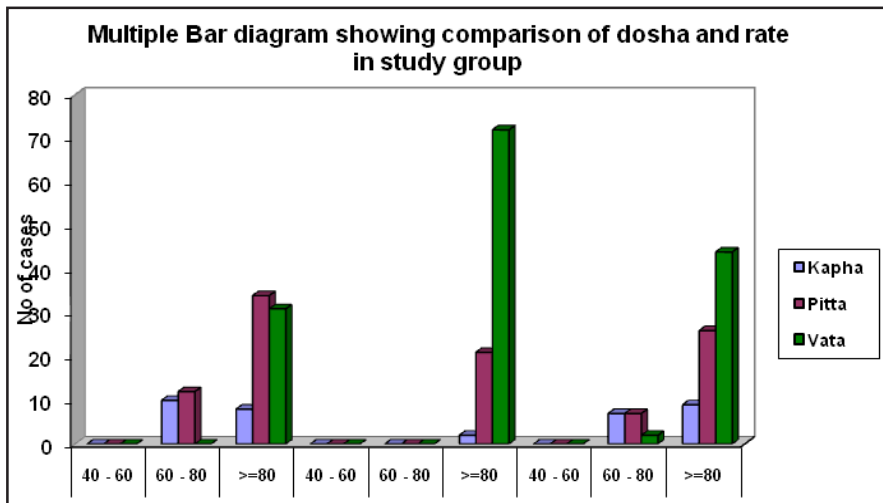
**Table 2 : Comparison of Dosha and vega after exercise in study group**

Dosha	Vega/min			Total
	40 - 60	60 - 80	>80	
Kapha	0	0	2	2
Pitta	0	0	21	21
Vata	0	0	72	72
Total	0	0	95	95

**Table 3 : Comparison of dosha and vega after food in study group**

Dosha	Vega/min			Total
	40 - 60	60 - 80	>80	
Kapha	0	7	9	16
Pitta	0	7	26	33
Vata	0	2	44	46
Total	0	16	79	95

$$\chi^2 = 13.85, P < 0.001$$



In this study, it was found that when pulse rate increases the dosha of nadi also shifts to vata, whatever the dosha may be in resting stage e.g. pitta dosha nadi changes to vata nadi immediate after exercise and again it shifts to its pitta dosha when the candidate get relaxed.

*Vega is considered as the rate of beats per min. In this study there are no variations in the rate or Vega of nadi according to sex. Practically pulse rate is same in males & females .The textual reference also shows same observations.*

From the graphical representation (Plethysmography), it was observed that the Vega of Nadi and the Rate of the pulse are the same. The number of the pulse-waves /min is correlated with Vega of doshaj nadi.

**Table 4: Comparison of dosha and sthan/location before exercise in study group**

Dosha	Sthan/Location			Total
	I	II	III	
Kapha	2	11	5	18
Pitta	9	37	0	46
Vata	18	13	0	31
Total	29	61	5	95

$$\chi^2 = 12.04, P < 0.001$$

**Table 5 : Comparison of dosha and sthan/location after exercise in study group**

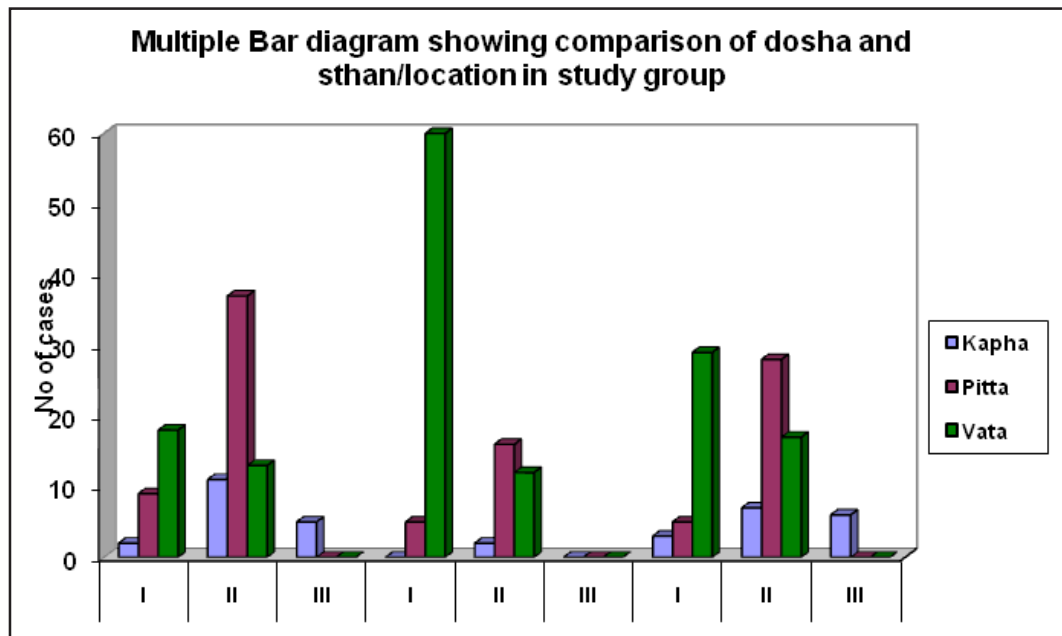
Dosha	Sthan/Location			Total
	I	II	III	
Kapha	0	2	0	2
Pitta	5	16	0	21
Vata	60	12	0	72
Total	65	30	0	95

$$\chi^2 = 31.09, P < 0.001$$

Table 6 : Comparison of dosha and sthan/location after food in study group

Dosha	Sthan/Location			Total
	I	II	III	
Kapha	3	7	6	16
Pitta	5	28	0	33
Vata	29	17	0	46
Total	37	52	6	95

$$\chi^2 = 18.73, P < 0.001$$



When examiner applies some pressure to feel the flow then he perceives the pulsations to his 3 fingers. The pulsations felt dominantly to particular finger indicates particular dosha flowing through the nadi e.g. if pulsations felt more at first finger then the flow of nadi is 'Vatapradhan'. It is applicable to middle and ring finger also i.e. 'Pittapradhan' in case of middle finger and 'Kaphapradhan' in case of ring finger respectively.

Table 7: Comparison of dosha and bala before exercise in study group

Dosha	Bala (in mm)			Total
	0 - 4	4 - 7	7 - 11	
Kapha	5	12	1	18
Pitta	5	14	27	46
Vata	11	17	3	31
Total	21	43	31	95

$$\chi^2 = 8.56, P < 0.05$$

Table 8: Comparison of dosha and bala after exercise in study group

Dosha	Bala (in mm)			Total
	0 - 4	4 - 7	7 - 11	
Kapha	0	2	0	2
Pitta	4	2	15	21
Vata	31	23	18	72
Total	35	27	33	95

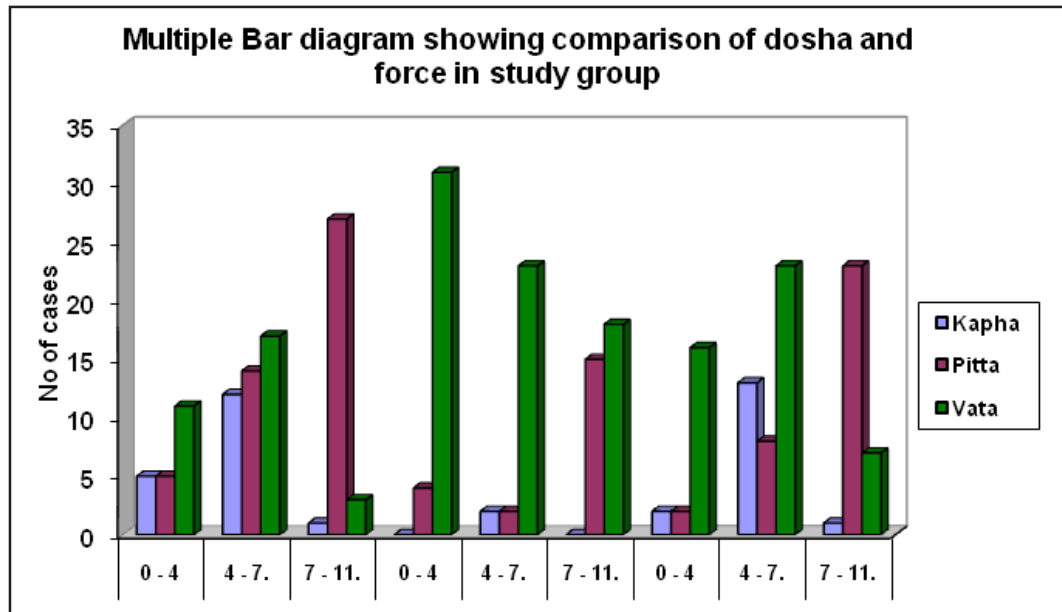
$$\chi^2 = 16.55, P < 0.0001$$

Table 9: Comparison of dosha and bala after food in study group

Dosha	Bala (in mm)			Total
	0 - 4	4 - 7	7 - 11	
Kapha	2	13	1	16
Pitta	2	8	23	33
Vata	16	23	7	46
Total	20	44	31	95

$$\chi^2 = 14.55, P < 0.001$$





In the graph the Bala of Nadi is represented in terms of amplitude of pulse wave. It shows the amplitude of Pitta Nadi is high, medium in case of kapha Nadi and low in case of Vata Nadi.

The conclusion may draw as the 'Bala of Nadi' depends upon driving force, pressure of the blood, volume of the blood, velocity and viscosity of blood. Applying the pressure on the nadi by three fingertips bala of nadi was detected. Then it was correlated with the amplitude of the wave in the graph.

At the resting stage, the maximum number of subjects showed nadi having Madhyam Bala i.e. of 42%. While the maximum number of subject showed, nadi having 'Heen' Bala in 'after exercise' stage, i.e. 47%. Hence the Bala decreases after exercise.

Vata	Feeble	Low
Pitta	Prominent	High
Kapha	Strong	Moderate

### CONCLUSION :

The study is concluded as follows:

- (1) Vega/Rate of nadi increases after exercise.
- (2) Sthan/location of pulse in the same individuals is felt differently at three stages
- (3) In Present study after exercise the location of nadi is felt predominantly at Vata Sthan and in after food stage Pitta Sthan.

The following parameters can be assessed and their co-relation with the doshas can be established with the help of SAMIKSH.

❖ The objective parameters for Vega and dosha are

Vega/Rate	Dosha
92.38 ± 13.79	Vata
87.16 ± 10.57	Pitta
71.60 ± 08.35	Kapha

❖ The objective parameters for Bala of nadi and dosha are

Bala	Amplitude of waveform in m.m.	Dosha
Kshin	0 to 4	Vata
Madhyam	4 to 7	Kapha
Uttam	7 to 11	Pitta

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## Philosophy

## Personal Wellness & Jain Principles (Physical and Mental Aspect)

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I am thankful to the organizers for inviting me to deliver a lecture at the National Seminar arranged by Jain Vishwa Bharati Institute , Ladnun, on the subject of , '**Engaging Jainism with Modern Issues**'.

There are many modern issues addressed by Jainism or Jain principles. However I would specifically like to talk on Personal Wellness, which includes, Physical and Mental aspects of an individual.

Personal Wellness is an active process of becoming aware and leading a healthy fulfilling and happy life. There are many aspect of personal wellness such as Physical, Mental fitness, social wellness, economical and intellectual wellness. Amongst all these aspects , for a individual , physical and mental fitness or wellness is very important for enjoying, day to day happy , peaceful and healthy life. Here I would like to discuss some common questions related to the subject, like –

1. Why is physical and mental fitness essential?
2. What is the scientific definition of an healthy person?
3. How can one maintain physical and mental health in daily routine?
4. What is the role of Jain ethics including *Anu Vraata* and six essentials in helping maintain personal wellness?
5. How does Ayurvedic science suggest daily and seasonal routine and *Achar Samhita* and how is it based on Jain Principles?
6. Contibution of Jain Principals of *Ahimsa* and *Anekantavada* to medical science

Physical and mental fitness is essential for a person because according to Jain Philosophy, the ultimate aim of our life is achieving '*Dharma, Artha, kaama and Moksha*' or liberation of soul from the cycle of birth and death. The sankrit verse for the same is –

**"Dharmartha Kama Mokshanam Arogyam Mulamuttamam"** – (*Charaka Samhita, Cha Su 1/15*)

These are called four *Purushartha*.

The meaning of *Dharma* is (*Dhru Dharanat Dharmaha*) to hold and support. It also means - the original pure nature of a substance. Generally people use the word to mean 'religion', but it has many meanings and interpretations in the religious compendiums. Jainism describes *Dasha Dharma*. In context to our subject, *Dharma* means good conduct, ethics and morality that should be observed in ones daily routine and duties towards ones family and nation, in short towards all humanity.

*Artha*: Earning money, wealth for the fulfilment of daily routine for living a happy life.

*Kaama*: enjoying desires of various kinds and fulfilling sense organs

*Moksha* – Salvation or Nirvan

To achieve the final goal of our life a person should be healthy physically and mentally.

Here I would like to present the scientific definition of a healthy person according to Ayurveda and which is also appreciated by the WHO –

**“Sama dosha, Samagnischa, Samadhatu, Malakriya  
Prasanna Atmendriya Manaha, Swastaha Abhidhiyate”**

*Sushrut samhita-Su 15/45*

For a healthy person not only all the systems of the body should be normal but his **mind, soul and sense organs** should also be in normal and healthy condition. Only then the person is called as healthy or *Swastha*. This healthy state mentioned by health sciences is achieved by observing the six essentials of Jainism or *Anu vratas* of Jainism and daily and seasonal routine described by Ayurvedic science. The six essentials are daily prayers (*Prarthana*), serving teachers and ascetics (*Guru Pusti*), study of compendiums, control over sense organs (*Saiyam*), austerity (*Tapaa*), donations (*Daana*). All these pious activities keep a person mentally fit and peaceful.

Jain ethics are an important part of daily routine, it is the most glorious part of Jainism and it is simplicity itself. Jain ethics have, for its end the realisation of *Nirvan* or *Moksha*. To effect this end the rules of conduct must be observed and corresponding virtues must be acquired.

Conduct, is reflection in action of inner faith in religion or moral values, cherished by an individual. His degree of self control and attitude of mind can be observed by his behaviour.

Jainism has prescribed rules of conduct separately for householders and ascetics. The rules of conduct are the same except that they are followed rigorously by ascetics than by householders. The aims of conduct and vows is essential for self purification and to maintain physical and mental health. The hallmark of right conduct, is right conviction in thought and action, freedom from delusions and passions, like anger, aversion, greed etc. Acharya Samantabhadra defines conduct as the abstinence of a man from *Himsa* (Violence), *Anruta* (falsehood), *Chaurya* (stealing), *Maithun* (intercourse) and *Parigraha* (attachment). There are 5 vows described for householders (*Anuvrata*) and ascetics (*Mahavrata*).

The five vows of Anuvrata are –

- *Ahimsa* (Nonviolence )
- *Satya* (Truthfulness)
- *Asteya* (Nonstealing)
- *Aparigraha* (Non attachment)
- *Bramhacharya* (Celebacy)

In addition to this, three *Guna Vrata* and four *Shikshaa Vrata* are included in the conduct of house holder.

### **Ahimsa(Non Violence):**

*Himsa* (Violence) are of two types, *Dravya Himsa* (Physical injury) and *Bhava Himsa* (Under the influence of Passions). Hurting by action , speech and thoughts to any life is *Himsa*. Actually hurting, asking someone to hurt or giving consent to hurt , are all considered as *Himsa*. By permutation and Combination of the above, there are 108 types of *Himsas* minutely described in Jainism. Hence *Umaswami*– the author of *Tattvarthasutra* has prescribed 5 rules of observing the vow of non injury. They are -

- Control of speech and thought
- Regulation of movement
- Examination of food and drink before taking it
- Care while lifting and placing things
- Respect for others and purity of motive

Gandhiji insisted that non-violence is the best way and the shortest path to truth. This is the weapon for fighting against evil and injustice. Man must persue truth and non-violence in life to achive self contentment. Under no pretext is violence justified. Violence in the name of religion itself is vehemently opposed by Jainism. *Ahimsa* is not something negetive. It has another aspect of *Daya* (Compassion), *Maitri* (Respect), *Pramod* (Joy) and *Maadhyastha bhaav* (Tolerance towards living beings as stated by Uma Swami. *Ahimsa* is an attitude of the mind and a supreme virtue in life. Live and let live is the golden rule of life stated by Mahavira.

### **Satya (Truthfulness):**

It is difficult to define *Satya*. *Umaswami* says that truth is multifaceted. He says that what is not commendable and which causes pain and suffering to living beings should be avoided. According to *Amrit Chandracharya*, making wrong statements through careless activity of body mind and speech is falsehood. Any speech full of passions is false. Backbiting, harsh, unethical, nonsensical speech is condemnable. It is adviced that one should speak what is noble, beneficial and concise. One must avoid boasting, jealousy about others, anger, greed, fear and exaggeration should be avoided to protect the vow of truthfullness.

**Asteya(Nonstealing):**

It is the avoidance of dishonesty in all walks of life. Stealing is connected with violence. Non stealing means abstinence from taking things which are not given. It includes transgressions, using false weight and measures, adulteration, buying stolen goods, illicit businesses and even charging abnormal interest. The vow is very comprehensive and forbids almost all such acts of direct and indirect theft.

**Aparigraha (Non Possession):**

Every violence is committed for Parigraha. Therefore a householder should try to limit his activities for possession. Householder is expected to be a contented man. He should not sacrifice either his own spiritual well being or social well being of others at the alter of uncontrolled greed.

**Bramhacharya (Celebacy):**

Abstinence from sexual pleasure. The ten concomitants of sexual desire are, wine, meat, gambling, music, song, dance, bodily decorations, intoxications and aimless wanderings, hence all these should be avoided. In short the Jain Conduct according to Ratnakarandaka Shravakachar says –

- Be content
- Be compassionate
- Be devoid of lust anger envy backbiting, aversion, greed etc
- Don't speak harshly
- Be respectful to ascetics and listen to their preaching and teachings
- Keep control over desires
- Be particular of non violent lifestyle
- Be steadfast
- Be particular of a healthy vegetarian diet.

I would like to state here that on the same lines of Jain principles, Ayurveda health science prescribes an ideal daily and seasonal regimen. In one of the important Ayurvedic compedium – Vagbhatt (Ashtangahridhaya), they say

***“Himsa Steyanyethaakamam.....Tyajet”Ashtangahridhaya2/21***

Violence, thieving, immoral behaviour, untruth, gossiping, irrelevant talk, jealousy, and non belief towards science are sinful acts and should be avoided. Here we see that Ayurveda like Jainism gives a lot of importance to Ahimsa. It is also said in Vagbhatta – Live and Let live. The verse is

***“Atmavat satatam pashedapi kita pipilikam”***

*Ashtangahridhaya2/23*

Which means, Consider all small creatures as yourself. Also they say that –

***“Ardra Santanataha tyagaha kayawak sandamaha, swartha buddhi parartheshu paryaptamiti sadvrttam”***

*Ashtangahridhaya2/45*

Preparation of wine and its selling should be avoided. Every living being should be treated with love. One should have proper control over physical and mental activities and one should take keen interest in others work. All these are the part and parcel of the *Ahimsa* principle or physical and mental nonviolence propounded by Jainism.

Ayurveda suggests *satvik Ahar* which nourishes the *Sattva Guna* of mind. It leads towards knowledge. Non vegetarian diet stimulates the *Tama Guna* of the mind, which leads to passions – like *Krodha* (anger), *Mada* (delusion), *Matsar* (Jealousy) etc, which is the root cause of mental and physical diseases.

**“Aahar Shuddhava sattva shuddhi, sattva shuddhi dhruva smritihi, smriti lambhe sarva granthinam vipramokshaha”**Chandogya Upanishada

Ayurveda suggests abstinence from alcohol because it increases *tama guna* of mind which numbs the mind, affects the vitality of soul and vital organs of body and creates physical inordination. So importance is given to selection of food its proper quantity and regularity in daily and seasonal regimen. Ayurveda also suggests the avoidance of fermented and *Ushna Tikshna Aahar* to avoid increase of *Tama guna* of mind, which leads to physical and mental diseases.

From the view point of individual pursuit of purification and liberation of soul one should have a healthy state of mind which can be achieved by good conduct and *Saatvik aahar*. It consists of a pure vegetarian diet, which includes preparations made from milk, ghee, Moog dal, wheat, fruits, vegetables and other grains etc.

Ayurveda gives importance to *Aachar Rasayan* in treating and increasing the mental resistance against diseases which include rules of conduct which includes truth and fair speaking, wholesome eating, restraining from alcohol, maintaining a spiritual temperament by meditating, chanting etc. which is very similar to conduct prescribed by Jainism.

Due to the impact of Jain principles of Non violence Jainacharya have been inspired to write down many Ayurvedic *Grantha* which consists of preparation of medicinal drugs without harming even the smallest form of life. One of the famous *grantha* of Jain Ayurveda is **Kalyankaarak**, written by Ugraditacharya. It consists of medicinal preparations without using *Madya* (alcohol), *Mousa* (meat) and *Madhu* (honey). The other famous Ayurvedic compendium written by Samantabhadracharya is **Pushpayurveda** (which unfortunately is lost to the world and we only find references of this compendium), said to include descriptions of 18000 different types of flowers without stamen and stigma (sterile flowers) and medicinal preparations from them.

Jainacharya also helped to develop a special branch of Ayurveda called **Rasashastra**, in which medicines are prepared from Mercury and Sulphur.

The important principal of Jainism is Anekantavada which avoids disputes and interprets the reality of the subject. It is used in Ayurveda for diagnosis, interpretation and for laying down important principles. Eg: for diagnosis and treatment, Ayurveda accepts different view points and methods of examination like trividha pariksha, Ashta Vidha Pariksha, Dashavidha pariksha etc. Even modern sciences suggest different examinations like urine, stool and pathological exams, Scans, MRI, ECG etc to arrive at a conclusion and finalize the diagnosis. For treatment

Ayurveda suggests to consider *Dushyam* (affected part), *Desham* (area), *Balam* (strength of the disease and the diseased), *kalam* (time and season), *Prakrutim* (constitution), *Vayaha* (age), *Sattvam* (resistance), *Satvyam* (digestive capacity of medicine and food), *Awastha* (stage of the disease) and accordingly the line of treatment is decided.

**“Dushyam, Desham, balam, Kaalam.....Naskhalati jaatacht”Ashtangahridaya2/21**

Nowadays people are using Kitchen and herbal medicines prescribed by Ayurveda for common complaints like indigestion, acidity, constipation, headache, common cold etc.

This is a complete Anekantaa view of phisical and personal wellness. So we can come to the conclusion that –

- Physical and mental fitness is important. It is achieved by observing Jain conduct described in *Anuvrata* and six essentials.
- These conducts are also included in Ayurvedic health sciences in the form of daily and seasonal regimen.
- Jain principles of Nonviolence is also included in Ayurveda to increase the mental resistance against diseases.
- Ayurveda gives importance to *Achar Rasayan* and *Satvavajaya chikitsa* which includes meditation and chanting and gives importance to purity of mind by observing *Saatvik Ahhar* and purity of thoughts
- Jainacharyas inspired by these principals have written *Rasashastra*, a special branch of Ayurveda in which medicines are prepared without harming living things.
- *Anekantavada* is used in Ayurvedic science for diagnosis, interpretation and for laying down important principles.
- In this way for personal wellness and for the physical and mental fitness, philosophy and medical sciences go hand in hand.

Hence we can see that Jain Principles are relevent in solving all modern issues.

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Clinical :



## **Importance of Tikta Kshir Basti in Rajonivruti Kala Sandhigat Vata**

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### **ABSTRACT**

Women may spend up to 1/3 of their lives in the post menopause. The role of women in midlife has changed and many as still perusing active careers into their 60s & 70s. With increase in lifespan women still have much to offer in diverse areas including job, social activities and family life. Post menopause covers all areas of health and wellbeing including cardiovascular, locomotor and breast disease. Menopausal transition marks a period of physiological changes as women approach reproductive senescence. Menopause is defined as cessation of ovarian function leading to permanent cessation of menses. Due to hypoestrogenic state and vataprakopa rajonivruti kala women are more prone to sandhigatavata. So use of tikta ras with gruta and milk helps in vata prashamana and ashti dhatu poshana. Which decrease chances of sandhigata vata in postmenopausal women.

### **KEY WORDS**

Rajonivruti, sandhigatavata, asthi kshaya, jathagni, dhatwagni, tikta kshir basti.

### **TOTAL REFFERENCES**

There are total 8 references included in this article

### **INTRODUCTION**

Sandhigatvata becomes a serious health treat for aging postmenopausal women. By predisposing them to inceased risk for fractures and result in mortality or morbidity among them due to impaired metabolism of oestrogen and calcium. Rajonivruti is very crucial phase of women life. Now a days due to changing lifestyl, dietary habits affect calcium, oestrogen metabolism which leads to early menopause and worsening of postmenopausal symptoms. Sandhigata vata is most common problem faced by every women at postmenopausal stage. Tikta kshir basti has important role in treating sandhigat vata successfully.

### **CONCEPT**

#### **❖ MENOPAUSE :**

Ceasation of menstruation at end of reproductive life due to loss of ovarian follicular activity around age of 45 to 50 yrs

**HARMONAL CHNGES:**

Depilation of ovarian follicles and resistance to pituitary gonadal Harmons Impaired folliculogenesis

Lowes estrogen production {serum level 50-300pg/ml to 10-20 pg/ml }

No endometrial growth

No menstruation

❖ **SYMPTOMS :**

Vasomotor symptoms

Cardiovascular

Locomotor

Nervous system

**BONE METABOLISM :**

Bone formation; osteoblastic activity

Bone reabsorption: osteoclastic activity

Both activities are balanced by – endocrine

Nutritive

Genetic

During menopause loss of bone mass is 3-5 % per yr.

**OSEOPOROSIS :**

❖ It is the condition where there is reduction in bone mass but bone mineral to matrix ratio remains normal.

❖ It predominantly presents with pain, stiffness, limitation of movements , crepitus , swelling.

**OESTROGEN AND OSTEOPOROSIS:**

❖ Estrogen prevents osteoporosis by -

❖ Inhibits osteoclastic activity

❖ Absorption of calcium from gut

❖ Stimulates calcitonin secretion from C cells of thyroid glands

❖ Increases 1,25 dihydroxy vit D

**MENOPAUSE AND OSTEOPOROSIS :**

❖ There is decline in collagenous bone matrix due to low estrogen resulting in osteoporosis.

**SYMPTOMS:**

- ❖ Back pain
- ❖ Loss of height
- ❖ Kyphosis
- ❖ Fractures. This causes increase in mortality and morbidity among elderly women

**FACTORS CONTRIBUTING OSTEOPOROSIS:**

- ❖ Estrogen deficiency
- ❖ Calcium and vit D deficiency

**RISK FACTORS FOR OSTEOPOROSIS IN WOMEN**

- ❖ family history
- ❖ age- elderly
- ❖ Race – Asian , white race
- ❖ Lack of estrogen
- ❖ Low body weight
- ❖ Early menopause
- ❖ Dietary – decrease Ca , vit D
- ❖ Disease – thyroid disorder , malabsorption

**AYURVED CONCEPT**

Shushrut Sha. 3/11

According to shushrut menarche age is 12 yrs, but after old age around 50 yr there is cessation of menstruation called rajonivrutti.

**SANDHIGAT VATA :**

It is degenerative arthritis of joints mainly seen during old age.

Commonly seen at hip, knee, some joints of spine.

It is the invasion and localization of morbid vata in all joints of body there by producing pain, swelling, disturbed movement, vatpurna druti sparsh. - Charak Chi. 28/18

Due to pathological condition vata gets accumulated in all empty strotasa which results in different diseases in all body or in some part of body.

**RAJONIVRUTI AND SANDHIGATVATA :**

	jarapakwa sharira	
ras and rakta kshaya		jathragni mandya
raj kshaya   uttarotar dhatu		dhatwagni mandya
kshaya		
asthi dhatu kshya		dhatu shaithilya
vata prakop		
		dhatu kshaya {asthi}
	Sandhigata vata	

**ASTHI AND VATA SAMBANDHA :**

Ashtang Hrudaya Su. 11

Vata is situated in asthi, pittais in sweda, rakt and in all rest of all kaph is present.

Vata and asthi does not follow ashraya ashryee sambadh.so if vata is increase then asthi dhatu is decreases.

	vata prakop
	vata and asthi ashraya ashrayi sambandh
	asthi kshaya
	Sandhigata vata

**TIKTA KSHIRA BASTI IN POSTMENOPAUSAL SANDHIGATA VATA :**

Ashtang Hrudaya Su.11/31

Tikta kshir bastiis mixture of milk, ghruta, tikta dravya.

It is one kind of yapan basti.

It is the best treatment for asthi dhatu kshaya janya sandhigata vata during post menopause

It is prepared by mixing gruta with tikta dravyas in kshir.

**KSHIR :**

Charak su. 27/217-218

Cow Milk having ten properties these are madhura, sheeta, snigdha, bahala, shlakshna, pichhila, guru, manda, prasanna. Best jivaniya and Rsayana. Milk has all the qualities that Ojas possesses It is Rasayana, Vayasthapana, Vajikara, Ayushyam, Pranadam (supports Prana)(Su.Su.45/49). It is Medhya, Prinana, Brihana, Dipaniya, Shramahara and Vata-Pittahara. It has Shamana as well as shodhana property (Ch.Su.1/107-112). Regular use of Kshira shows best Rasayana effects. Milk is the Best Jivaniya Dravya (Ch.Su.25).

**GHRUTA :**

Charak su. 27/232

Among all sneha Gruta is best sneha having sheet, madhur rasa and vipak. Charak su. 13/14-15

Ghruta is pitta vata hara, increases rasa shukra and ojas , vatahara but not kapha vardhana , useful for bala vardhana.

Sneha containing some phospholipids with helps in formation of asthi and majja dhatu.

Addition of Ghrita or any Sneha makes Basti a homogenous mixture.

This Sneha brings uniformity in the mixture and due to this Kalka of Basti mingles Quickly.

**TIKTA KSHIR BASTI:**

Dalhan su. Kalp. 4/40

Purishdhara kala is Asthidhara kala .It is fift kala among all.

Tikta rasa acts on vata mahabhuta and akash mahabhuta

Ashti dhatu is sthana for vata mahabhuta and strotas is of akash mahabhuta

So that tikta ras helps sneha and kshira to reaches and acts on proper sthan

According to dalhan purishdhara kala is asthidhara kala hence basti which is given in pakwashaya directly acts on asthi dhatu.

It is one of the type of yapan basti.

**TIKTA KSHIR BASTI KAAL :**

According to dhatuposhan nyaya :

Uttarottar dhatu poshan is completed up to sukra dhatu up to 8 days

Asthi dhatu poshan – on 7 day

Hence it is necessary to administered basti up to 7 days for work on asthi dhatu poshan.

**PURVA KARMA :**

Snehan and swedan

Basti is administered in pateint before considering following criteria

Dosh, aushadh, desh, kaal, agni, satmya, ect .

**PRADHAN KARMA :**

Patient is in vamparshwa position with right leg is straight and left leg is flexed.

Let the patient be in bed for 5 to 10 min after administration.

After administration of basti it is observed carefully for its pratyagaman kaala Ati yoga and ayog lakshana.

**PASCHAT KARMA:**

Patient is informed all about pathya apathya .

Give treatment for any of basti vyapad.

**CONCLUSION:**

Sandhigat vata is one of the common problem among postmenopausal women. It occurs mainly due to oestrogen and vit D, calcium deficiency.

Tikta kshir basti is helpful treatment.

Tikta kshir basti helps to improve asthi dhatu formation and reduced vardhakya janya vata prakop.

So every postmenopausal women should gave tikta kshir basti as prophylactic and curative aspect of treatment.

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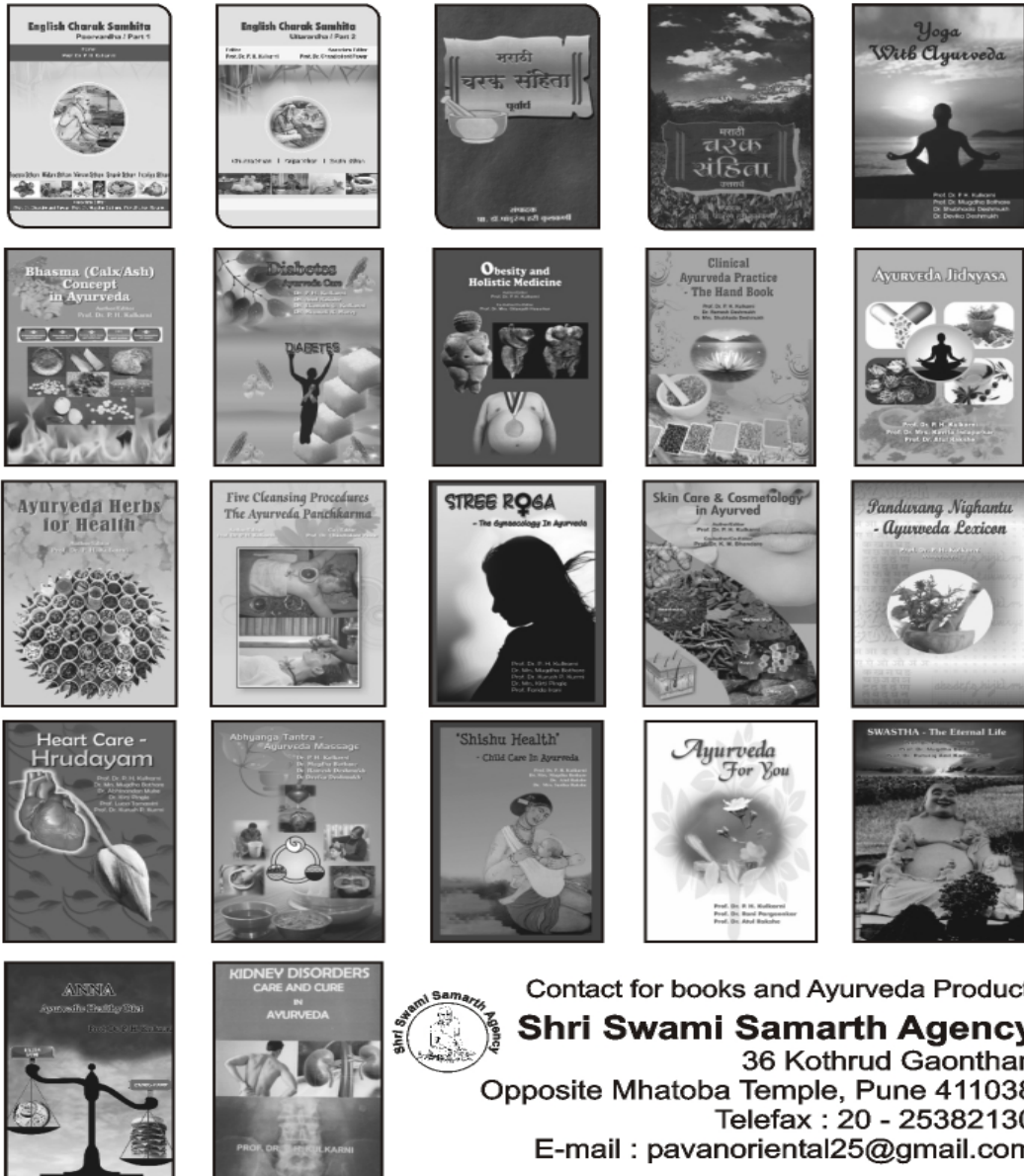
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